THE ESSENCE OF CORPORATE STRATEGY

Theory for modern decision making

Jeremy Davis
& Timothy Devinney

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Jeremy G. Davis

Timothy M. Devinney

Allen & Unwin

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Chapter 1

The philosophy of corporate strategy

All management theories become conspiracies against good management and serve mainly to cover the manager's ass.

T. George Harris

One would think that the field of corporate strategy or strategic management has existed as one of the linchpins of management development for as long as the academic sciences of business have been in existence. However, strategic management or strategy is a relatively young field facing all the problems and difficulties associated with a rising academic discipline. Historically, the field of strategy was viewed as 'integrative'—that area where all the functional disciplines could be merged into a coherent whole. How, for example, does the company's financial strategy relate to its corporate strategy? The reality was more sanguine with the field of strategy representing something of the United Nations of business disciplines—a surface cache with little of substance behind it. Indeed, even today, there are few academics trained in strategy. Most academics actively involved in the teaching of strategy hail from a host of disciplines, the most obvious being economics and organisational behaviour but with many others represented as well—anthropology, sociology, population ecology, finance, marketing, political science and theology to name only a limited number. Add to this the fact that the field of strategy is where many management consultants can get their academic seal of approval by teaching at a business school and you have a potent mixture of ideas and egos that makes for some interesting debate. But does it add to our knowledge? Is the debate fruitful? Is it scientific or purely religious?

Table 1.1: Recent management techniques and fads

1950s	1960s
Decision trees	Conglomeration
Managerial grids	Satisfiers/dissatisfiers
	Strategic planning
	Theory X and theory Y

1970s
Brainstorming
Learning/experience curves
Management by objectives
Scenario plannning
T-group training
Zero based budgeting

1980s	1990s
Corporate culture	Benchmarking
Decentralisation	Broadbanding
Empowerment	Business process reengineering
Excellence	Change management
Intrapreneuring	Chaos theory
Just in time/kanban	Fuzzy logic
Management by walking around	Globalisation
Matrix management	Learning organisation
One minute management	Quality function deployment
Portfolio management	Relationships management
Quality circles/TQM	Restructuring/Delayering
Strategic business units	Service quality management
Theory Z	The knowledge-based company
Time based competition	The virtual corporation
Value chain	Value constellations
Variety based competition	Value-adding partnerships
Visioning	
Wellness programs	
Workout	

Much of the difficulty of developing a theory of strategy surrounds our inability to develop a set of principles to which everyone adheres. Table 1.1 presents a listing of some of the management principles and fads that have dominated strategic thinking over the last four decades. What is interesting about this list is the growth in its size and the fact that much of what was considered relevant or correct in the past is viewed as irrelevant or incorrect in the future. For example, you could not pick up an edition of the *Harvard Business Review* in the 1960s and 1970s without being bombarded by the virtues of conglomerate mergers. In the 1980s and 1990s, an issue is not published that doesn't flog the importance of the focused organisation. The problem is that most management thought is normative rather than positive. *Normative* theories and ideas are driven by a pursuit of how things should be. Traditionally, normative theories are built on inductive reasoning. *Positive* theories and ideas concentrate on explaining why things are the way they are. They deduce their conclusions from the investigation of data.

In this book, we are attempting to address the issue of 'what is strategy?' by examining it from a distinctly positivist perspective. The text is scattered with research findings and supporting anecdotal evidence is used to highlight the theories and principles behind these findings. There will also be a discussion of the support, or lack of support, that exists for many techniques currently in vogue. The purpose is to provide the reader, not with a series of easy prescriptions or laundry lists of dos and don'ts, but with a logical philosophy with which you can structure your thinking about corporate strategy. Our purpose is not to sell you on a single theory, since we do not believe one exists, but to give you a basket of relevant and empirically supported theories with which you can add to your own repertoire of ideas. We will also focus on the theory of corporate strategy with less emphasis on the implementation of strategy. Our concern is first and foremost with conceptualising and developing strategic thinking. A second book would be necessary to do justice to the issue of how to implement that thinking successfully.

The logical foundations of strategy

At this point it is important to outline briefly some of the antecedents to our thinking. What is behind our approach to developing corporate strategy? Our approach is distinctly rationalist. The reader will see quite clearly that the primary foundation for much of the thinking in the text is driven by recent developments in economics. This is reflective of two facts: the growing position of economic modelling within the strategy field and the empirical support behind many of the models. It is our belief that the development of strategic thinking is, and should be, a rational process. This does not mean that the strategic development process will be completely rational in practice. This is the second characteristic of our thinking. Whilst rational in purpose, human, corporate, market and environmental forces will have a dramatic effect on the impact of managerial action. Managers and firms have limitations and it is important that our thinking recognises and reflects this fact. Therefore the primary ideas behind our thinking are as follows:

- The fundamental process of corporate strategy development is rational.
- Managers and firms are bound by human, firm, market and environmental factors that limit their actions.

Chapters 2 and 3 will address these issues.

Keeping this in mind we will cover the development of corporate strategy using a simple approach within which a host of other theories and empirical and anecdotal evidence can be combined. The beauty of this simple approach is that it allows us to encompass a great deal of prior thinking in a single framework. Much of the difficulty with the historical development of a theory of corporate strategy has been the tendency for theories to become overly complex as they have attempted to account for more disparate areas of strategy. Our approach is the opposite—more ideas will be encompassed in a simple framework that evolves outward in a logical fashion.

The development of corporate strategy can be based on three simple points: (1) Customers have specific *value propositions* that (2) firms attempt to satisfy by bringing to bear their underlying *resource base* which (3) they transform into products and services through their *business processes*. This approach is useful because it focuses managerial thinking on:

- understanding, measuring and dissecting current and future customer value;
- understanding, measuring, mapping and managing current and potential business processes; and
- understanding, measuring, managing and developing the firm's fundamental resource base.

Attached to this framework will be the idea of achieving a strategic advantage that is robust and sustainable. In doing so, we will concentrate on two primary areas: the management of the value-processes-resources linkage and the structural and product organisation of the firm. In the former case, we will examine three areas: the management of innovation, the management of cost and the management of the market through segmentation. This will be covered in chapters 5 through 7 and much of the discussion will have a product or business unit flavour. Chapters 8 and 9 will address the issues of organisational structure and product structure. It, too, will be related to the value-processes-resources framework in that we will be examining what are the commonalities and differences between customers, products, markets and business processes that imply that one product/organisation structure is superior to another.

In the end, all strategy is about rivalry. Most popular books on strategy talk about 'how to beat the competition'. However, our approach is different and is strongly related to the developments in game theory. The goal of the management of rivalry is the achieving of cooperation. Understanding rivalry requires three things: understanding the structure of the environment, understanding the payoffs to the players in the game, and knowing who knows what. In other words, rivalry is about understanding the terrain, understanding the stakeholders and their motivations and understanding the knowledge base of the stakeholders. Together they will affect the actions of the stakeholders and only by managing all three can cooperation be achieved. These are the issues addressed in chapter 10.

The art and science of strategy

There are many managers who view the development of strategy as primarily an art. No doubt these managers are the avid readers of authors such as Sun Tzu, von Clausewitz and Machiavelli on management. However, to imply that strategy is all art and no science is to ignore the fact that there is a growing host of evidence that points to specific consistencies in the nature of the way markets and firms evolve and which strategies work and don't work. To ignore this evidence would be folly. It is equally fallacious to assume that all aspects of strategy can be boiled down to a neat set of theories the way history was predetermined by the science of psychohistory in Isaac Asimov's *Foundation Trilogy*. To understand why this is the case, we end this introductory chapter with the story of Julius Caesar and Vercingetorix and the battle of Alesia in 52 BC.

Vercingetorix was the leader of the Gallic Celts. After defeating him in the field, Julius Caesar pursued Vercingetorix and his band of Celts, finally trapping them on a hilltop near what is now Dijon in France. Having suitably trapped the Celts, Caesar surrounded them with the siege fortifications for which the Romans were famous. Unfortunately for Caesar, Vercingetorix had sent out a request for help to the various Celtic tribes who amassed 250,000 troops and soon laid siege to Caesar's troops. Outnumbered eight to one, Caesar managed to rally his troops in what is considered to be one of the decisive battles of antiquity and assured Caesar's place among the great generals. But what was responsible for his success? Clearly being surrounded and considerably outnumbered was not a predicament in which a good general would normally want to find himself. Indeed, it violates several of the basic rules of war—to determine the time and place of one's battle and to bring superior force to bear against one's enemies.[1]

However, Caesar had several advantages. First, the Roman fortification systems were the most advanced in the ancient European world. This allowed him to sustain his defence. Second, the Roman legion system allowed for independent movement of groups of troops and devolved leadership and responsibility down to the legion commanders. This allowed for quick action and the timely movement of clusters of troops. Third, Caesar was recognised as a great leader who managed his troops effectively by moving them to the points where the Celts attacked and he showed great personal courage—he always managed to be at the point of attack and was recognised as one of the best swordsmen in Rome. In the end, the Romans were victorious, Vercingetorix was publicly executed in Rome and Gaul was conquered.[2]

What does this story tell us? The primary lesson is that both art and science come into play and it is difficult, if not impossible, to separate the contribution of each. However, three key conclusions can be drawn from the story and they will arise throughout the text.

- Having superior resources is a necessary condition for success.
- Having superior managerial skills is a necessary condition for success.
- Being lucky is a necessary condition for success.

Our final point is one of warning. Success can lead to excess and excess to failure when managers assume that it is their ability and not the combination of their skills with resources and luck that ultimately determines the sustainability of their competitive position.

Chapter 2

Strategy and strategic decision making

Perception is strong and sight weak. In strategy it
is important to see distant things as if they were close
and to take a distanced view of close things.

Miyamoto Musashi (1584–1645)

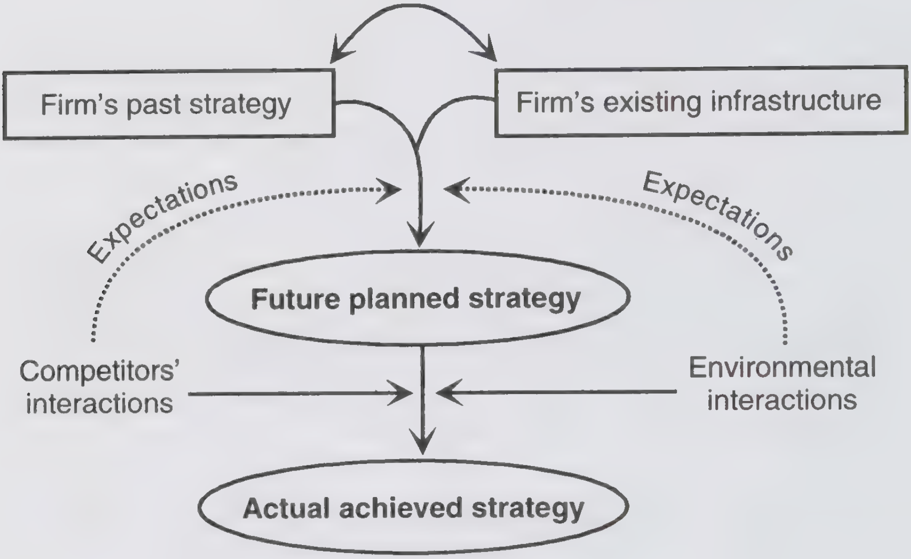
The domain of strategy

The major theme running through this book is a concern with the question of strategy formulation. We should recognise that it is only one part of a more general concern with corporate policy and with the role of the general manager. So recognising that it is a subset of a larger whole, what do we mean by corporate strategy, and how are we going to approach it?

There are about as many definitions of strategy as there are textbooks. We are not particularly concerned about any one definition, but rather about the general flavour that comes through. Typically, when people refer to a company's 'strategy' they are talking about the whole pattern of decisions that sets the long term direction of the organisation. There tends to be a concern not with a specific decision, although some specific decisions may be critically important, but with the pattern over time. And we observe that a concern with consistency, or the coherence of a pattern over time, is a recurring theme in discussions of strategy.

At this level, we can distinguish between two types of strategies: planned (or intended) and actual (or realised). *Planned*, or intended *strategies* are the pure actions that a firm's decision makers take based upon their perception of other firms' actions and of the expected gains from pursuing those actions. *Actual*, or

Figure 2.1: Planned and actual strategy



realised, *strategies* are the actions that the firm's decision makers ultimately take based upon new and emerging information. The process is depicted in figure 1.1.

For example, in 1969 Michelin built a radial tyre factory in Nova Scotia, Canada, expecting to enter the US market slowly as funds became available. That was its planned strategy and its actions in both the US and Europe reflected this 'go slow' approach to the US market. However, the OPEC oil shock and the rapid radialisation of the US market created a set of circumstances where Michelin had to update this strategy to account for the unexpected restructuring in the American tyre industry. Its actual strategy was a 'go fast' approach to the US market (see Case 2.1). This example shows the trap one can get into by inferring a company's planned strategy from its actual implemented strategy. The 'seen' strategy represents a complex interaction among the company's intentions, its competitors' actions and the market environment.

Figure 1.1 points out two other interesting characteristics of the strategy development process: its dependence on historic position and its reliance on managerial expectations. Both of these factors serve to moor a firm's strategy around its current position. Strategy development becomes less of a *tabula rasa* rational process and more of a muddle through an emerging one way maze.

The hallmark of the business process re-engineering (BPR) craze is its insistence that the firm be reborn by ignoring many of its historic antecedents. In reality, no firm can do this nor should it rationally wish to ignore its history. History is more than a sunk cost. Mentally, managers have difficulty ignoring past decisions and attempt to maintain apparent consistency in strategic development, sometimes twisting the past to make it more consistent with the present. But this isn't the rational reason why past strategy remains an anchor for future strategy. Past strategy involves commitment of resources and servicing of customers that cannot be jettisoned on a whim. As an incumbent, IBM's strategy will be different from that of more recent upstarts such as EDS in IT outsourcing or Dell in PCs. In Australia, Telstra's strategy is anchored by its enormous customer base, physical infrastructure and union work force. Young companies like Optus, Australia's second phone carrier, facing all the problems of being an entrant into a dominant firm's market, can take solace in the luxury of having no past with which to constrain its future.

Strategy development is also about expectations. Expectations not only about outcomes but assumptions about competitors and the environment; assumptions that are based on past experience. As we shall show in chapter 3, normally these expectations are biased and less than fully rational. However, one example of the frailty of human decision making will serve to illustrate how even facts can be distorted over time. Greg Markus[1] looked at the stability of people's political positions between 1965 and 1982 through a series of surveys on specific issues in 1965, 1973 and 1982. Markus not only asked people their current opinion but inquired what they thought their position was on that topic in the prior surveys. What was striking was his finding that people's perception of their past attitude was more closely related to their current attitudes than their actual past attitudes. Such 'retrospective bias' implies that expectations based on perceptions of past outcomes may have more to do with current outcomes than anything else. Facts it seems are not facts.

Case 2.1 Michelin Pneumatics

In 1971, Michelin Pneumatics, the largest tyre producer in Europe and third largest in the world, began its North American production with a radial truck tyre plant and steel tyre cord plant in Nova Scotia, Canada. The investment was heavily backed by the Canadian government with Michelin's investment amounting to only $22 million of the $84 million necessary for start-up. At the time Michelin began its production in North America, the US companies and their Canadian subsidiaries had just heavily invested in the bias-belted tyre technology, providing consumers with a somewhat inferior but significantly cheaper alternative to the radial technology. Due to the dominance of the US multinationals in the OEM and retail replacement segments of the North American market, Michelin faced significant barriers to entry. It had neither the scale nor the financial muscle to move into the OEM market nor did it possess the marketing and distribution capital to tackle the replacement market in a big way. In addition, working capital requirements and expansion plans in Europe were currently eating up around 80 per cent of Michelin's internally generated cash flow.

The tough barriers to entry in the North American market and European financial strains led Michelin's planners to opt for a 'go slow' approach to the North American market (Michelin's goal was 10 per cent of the market). The strategy made sense from a number of operational and strategic perspectives.

From an organisational perspective, Michelin's corporate culture was uniquely French and required some experimentation with North American workers before it could be expanded to plants in the United States. From a marketing perspective, Michelin needed time to build up a distribution network and work at breaking the US companies' dominance of the OEM market. Strategically, Michelin was in a precarious position vis-à-vis its American competition. The American companies had just made enormous investments in an alternative technology and one that was inferior to Michelin's radial technology. To directly attack that investment by going for large market share would simply force the American companies to react both in America and Europe, where together the big three American companies (Goodyear, Firestone and Goodrich) operated more plants than all the European companies combined. All the information pointed to the go-slow approach as the rational strategy for Michelin's entry into the North American market.

Almost before Michelin could implement this strategy the world changed. The 1974 OPEC oil embargo caught the tyre industry in a classic price scissors. Its production costs, which depended heavily on oil, escalated. Demand was affected in several ways. Driving mileage was significantly curtailed, reducing the demand for replacement tyres. Various other factors led to a significant decline in the sales of new cars putting a heavy dent in the OEM market. For a radial producer like Michelin there was something of a silver lining to the darkening clouds. Because of the fuel efficiency of radials, the American automobile manufacturers began putting radials on their cars as standard equipment. Strategically, this caused problems for Michelin. As it did not have an American passenger tyre plant, it could not supply the volume of tyres demanded by the OEM market within the time frame required by manufacturers. In addition, the decline in value of the US dollar implied that the cost of each imported tyre was rising. This, however, was not the worst of it. With its major customers (the auto companies) switching from bias-belted tyres to radials, the US companies began investing heavily in radial tyre production. Facing these new circumstances, Michelin had little choice but to abandon its conservative go-slow strategy. It began investing heavily in facilities in the southern US and was forced into the credit markets for needed capital. Within a five-year period its debt to equity ratio rose from 0.81 to over 2.25.

Source: This case is adapted from W. Davidson & J. de la Torre, *Managing the Global Corporation*, New York: McGraw-Hill, 1989.

When people talk about strategy they are normally concerned with those decisions that require the *commitment of major resources*. There are a large number of decisions made that we would not describe as strategic because they do not require major resource commitments. By 'major resources' we do not only mean money. Human, physical capital and information resources are just as important. In many cases, a strategy choice requires selection, training and motivation of people in very particular ways. If the company then alters its intent and decides not to pursue that strategy, or decides that the strategy is no longer appropriate, much of the massive investment that has been made in recruitment, selection and education and in development of a functioning organisation is also wasted.

In speaking of major resources it is useful to think about the composition of, and differences in, the resource bases between firms and how these different resource structures lead to different strategies and outcomes. Any two firms picked at random from the same industry are rarely identical in their resource base. It is the uniqueness of that base, and the ability to keep its secrets within the firm, that determines the advantage the firm enjoys. This idea is the basis of what is known as the resource based theory of the firm, a topic we will take up shortly.

Take the example of Procter & Gamble and their purchase of Max Factor from Revlon. The unique resources that P&G brought to this acquisition were its distribution network (it had spare capacity in its North American and European drugstore chain distribution system) and its marketing research capital. It was the strength and uniqueness of this latter asset in particular that allowed P&G to achieve success with this acquisition. P&G's marketing research capabilities allowed it to spread its knowledge over literally thousands of different products while collecting new information from every additional sale. This example highlights the idea of a *competitive* versus a *comparative* advantage.

A comparative advantage is an advantage that can be mimicked by other companies at relatively low cost. For example, a computer company with lower labour costs because it is operating assembly facilities in Indonesia has a comparative advantage over its rivals in the United States. To alleviate the cost difference, the American producers can build facilities in Indonesia or similarly situated low wage countries (such as Mexico). A competitive advantage is an advantage that cannot be imitated or can only be mimicked at very high cost. Patents, specialised knowledge or proprietary access to raw materials all represent competitive advantages. Competitive advantages, unlike comparative advantages, are long-lived and sustainable. Now back to our P&G example. P&G's marketing research capital is a competitive advantage because it cannot be copied except at great expense (if it could be copied at all). However, its distribution capacity is really a comparative advantage due to its size. It is neither unique nor special (i.e., it uses no proprietary methods or technologies that are unique to P&G).

Case 2.2 Competitive versus comparative advantage: Procter & Gamble

At first glance, Procter & Gamble's detergent and toothpaste business would seem far removed from the resources required to compete successfully in the cosmetics industry. Yet Procter & Gamble's $US1.1 billion acquisition of Revlon's Max Factor and Betrix cosmetics businesses has succeeded because of its ability to build competitive advantage out of its unique resources.

P&G had a number of resources that meant it was well placed to move into cosmetics. P&G has an enormous distribution network in the US, in which it had spare capacity which could be taken up by cosmetics. The acquisition of Max Factor allowed P&G to exploit this ready-made distribution network for increasing sales in the US, while giving P&G access to more outlets in Europe and Japan.

P&G's sales of fragrances and cosmetics in Europe and Japan have increased from negligible levels to hundreds of millions of dollars as a result. P&G can now use its newly acquired European and Japanese outlets to sell products such as the Cover Girl range that were previously confined to the US market.

P&G also has considerable strength in advertising and market research, which it has been able to apply to the cosmetics industry with great effect. P&G has used its large advertising budget to successfully reposition a number of brands that had been experiencing depressed sales. The company has been able to spread the knowledge it has acquired through years of market research across its new product range. P&G is the first company to develop mass market cosmetics brands in Europe, a market with a very different sales culture to that found in the US, and is now one of the world's largest mass-marketers of cosmetics.

Many industry analysts and competitors originally doubted that P&G could succeed in this market. Their analysis failed to appreciate the difference between comparative and competitive advantage. Many of the advantages that other firms enjoyed in cosmetics could be readily imitated by P&G. The leap from marketing soap to cosmetics is not that great. P&G's considerable market research capital, on the other hand, cannot be duplicated by the incumbent firms without incurring very high costs and the associated risks.

Sources: 'P&G is turning into quite a makeup artist', *Business Week*, 8 April 1991, and 'Procter & Gamble is following its nose', *Business Week*, 22 April 1991.

Another aspect of strategy is that *commitments are irrevocable*. If we are free to make choices and reverse them relatively quickly at no cost then the choice is rarely strategic. So, for example, if you had 80 million dollars in the bank and decided to place it in the overnight money market, we would certainly regard that as a commitment of major resources. Yet if the funds were at call, the decision could be revoked tomorrow; in this sense it would hardly be a very important strategic decision. In talking of strategy, we are concerned primarily with those decisions where any attempt to change your mind after the event imposes very high costs on the firm. The most obvious case is the selection of plant and equipment designed for only one purpose. If you install a cement kiln, there is nothing else you can do with it; if it turns out you have made a bad bet, you may have to write off the whole plant. You may also have to write off all of the human resource costs associated with that commitment. So we are interested in those choices where (once made) you must live with the consequences. Reversing a strategy that has been implemented inflicts a high cost, normally on the corporate balance sheet, and also on corporate morale.

There is a third important connotation to the term 'strategy'. The word 'strategy' is frequently used in the context of *a game or conflict against competitors*. If we look at the etymology of the word in its original Greek meaning, 'strategy' is specifically associated with the practice of warfare. The best accepted English definition is 'the art of generalship'. So it is not surprising that the term is used to describe decisions that companies make when they are engaged in oligopolistic[2] competition.

The other powerful imagery around the word strategy comes from that part of mathematics and economics called game theory. Game theorists divide games into three types: games of luck, games of skill, and games of strategy. Games of luck include playing dice or roulette. A game of skill is one in which you can actually influence the outcome, depending on the amount of expertise that you bring to the table. A game of skill is a game of luck where the player's 'luck' is determined by his/her skill level. Playing a game of golf against par to see if you can improve your handicap, not match play, is a game of skill. Here you play against the course and against nature, so that the quality of the outcome depends upon how much skill you bring to it and maybe just a little bit of luck. But strategic games are those in which there are rarely clear optimal choices. The optimal choice depends upon the decisions made by other players in the game, something you usually do not know prior to the event. So, the notion of a game of strategy in game theory is that you play against other competitors, not just against nature, and that there is rarely an unequivocal right answer (see Case 2.3 for an explication of strategic games).

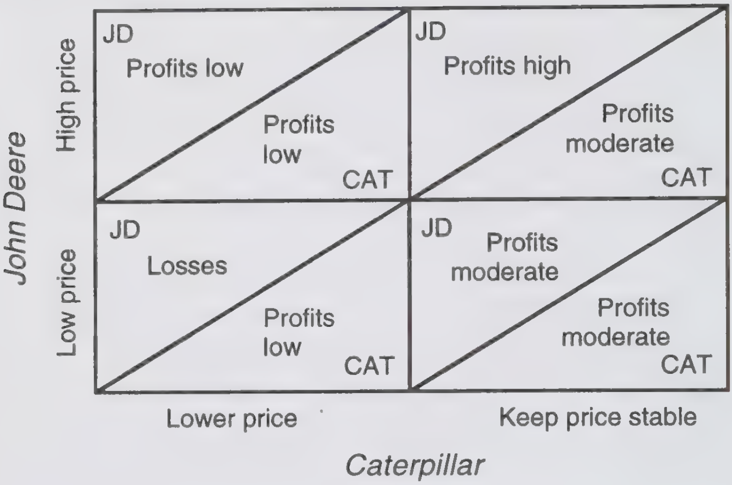
The complexity of a game of strategy can be seen by considering a problem brought up by Tom Clancy in *The Hunt for Red October*. Soviet and American submarines come across one another and each is unsure about the other's intentions. However, because of the unique sound tracings each submarine gives off, each of the commanders knows the exact type of submarine and which commander he is facing. In addition, each commander is well-versed in the tactics (order of battle) of the enemy. How does the strategy unfold? Well, you could say that each commander knows what the other is going to do since they appear to have complete information. But the enemy knows that you know his order of battle (and vice versa!) and he could change it. But that too is a needlessly naive assumption since he also knows that you know that he knows that you know his order of battle (and vice versa!). We could continue forever with this line of reasoning. The point is that you are in a world in which you can have a brilliant strategy, but if it happens that you assumed your opponents were all going to turn left and they all turned right, it would turn out to be a disaster.

Case 2.3 Game theory and John Deere vs Caterpillar

Strategic game theory is a way of characterising the interaction amongst the possible actions of a group of players in the determination of the equilibrium or stable strategies to be played by those individuals. The key hallmark of game theory is that it takes strategic behaviour out of the realm of fuzzy speculation and links it with rational and purposeful behaviour. For the game theorist, strategies do not determine payoffs but rather the knowledge of what the payoffs are, given the specific actions taken by yourself and your opponent, determines what the strategy should be. From this perspective, strategy evolves from the economic environment.

The key ingredients of the determination of a strategy are the *actions* that players can take and the *payoffs* that they receive from those actions. From a corporate perspective, actions can include advertising, pricing, location choice,

Pricing strategy and profit payoffs



John Deere	Caterpillar: Lower price	Caterpillar: Keep price stable
High price	JD Profits low Profits low CAT	JD Profits high Profits moderate CAT
Low price	JD Losses Profits low CAT	JD Profits moderate Profits moderate CAT

entry speed, capacity choice, and so on. The payoffs from these actions can be characterised as either profits, cash flow, or market share. Strategies are nothing more than a representation of the specific actions to be taken given specific circumstances.

To see the importance of how competitors' actions are linked, let us examine the case of John Deere and Caterpillar. John Deere introduced a small bulldozer known as the JD750. For John Deere this represented its first foray into the large tractor market, a market dominated for a long time by Caterpillar. Historically, Caterpillar had supplied mainly large equipment and had left most of the small equipment market to companies like John Deere. However, Caterpillar produced some smaller tractors which led to a little direct but peripheral competition with the John Deeres of the world. The JD750 was a unique machine in that it had significant advantages over the similarly positioned Caterpillar machine. It was estimated that using the JD750 as opposed to its Caterpillar alternative (known as the D5) saved an additional $40,000 over the life of the machine. The question for John Deere was how to price the JD750 in light of Caterpillar's possible competitive pricing reaction.

On the next page we see a characterisation of each of two simplified pricing actions by both John Deere and Caterpillar. The high price action by John Deere represents an attempt to realise a portion of the $40,000 efficiency gain achieved by the users. The low price action represents parity with Caterpillar's D5. Caterpillar's choices are to keep its D5 price the same or discount it below the price of the JD750. The use of a payoff matrix is useful in examining competitive interaction since it allows us to see the joint payoffs from specific combinations of actions. From this we can determine: (1) whether a stable strategy (or set of strategies) exists, and if so, (2) which strategy should be pursued.

Examining the payoff matrix we can now see the consequences of each combination of actions:

- If John Deere prices high then Caterpillar should keep price stable.
- If John Deere prices low then Caterpillar should keep price stable.
- If Caterpillar lowers price then John Deere should price high.
- If Caterpillar keeps price stable then John Deere should price high.

Under the circumstances outlined we have a stable series of strategies: John Deere enters the market with a high price and Caterpillar yields market share by keeping its prices stable. John Deere receives a high profit while Caterpillar maintains a moderate profit stream.

Managerially, it is clear why Caterpillar loses if it follows an aggressive price-cutting strategy. Because it has such large volume, in order to keep some customers from defecting to John Deere, it has to pass on price reductions to too many customers who would not switch anyway. Alternatively, John Deere has little reason to keep the price low since by keeping the price high it reduces any incentive Caterpillar has to react. Incidentally, John Deere entered the market with a low price and Caterpillar did not react by changing price (indicating that Deere's pricing strategy was probably incorrect since it needlessly gave away profits).

Source: This example is adapted from Harvard Business School Case 577–112, *Deere & Company*, 1977.

Consider a decision to build an aluminium smelter in Australia or to expand an existing smelter in New Zealand in the late 1970s. The strategic planners probably thought, 'OPEC means a crisis in terms of all oil fired power generation in Japan and Western Europe, so there will be shutdowns of many smelters based on oil fired power. Demand for aluminium is still growing, so we should expand aluminium production anywhere there is hydro power or coal fired power at a reasonable price. Australia and New Zealand look like a good bet in this respect.' The only problem was that about eight other competitors came to this conclusion at the same time. As a result, everybody built an aluminium smelter during the so-called resources boom. Many of those smelters have suffered significant losses as the aluminium price fell below the cost line in the 1980s.

Strategic decisions, whose success depends not only on successful implementation but also on the decisions made by others, involve major irrevocable commitments of unique resources.

Implicit theories of strategy

In a sense, the word 'strategy' has little meaning in the economist's world of many firms in perfect competition. For firms under perfect competition, the principal issue that arises is whether the firm can be run well enough to meet the requirements for viability in that model. The manager of such a firm is not specifically concerned with any competitor, merely with whether the firm's costs are low enough to survive against prevailing price levels, which it cannot influence. Thus the concept of strategy has most relevance when firms compete in an oligopoly and when each firm is conscious of the effect of its decisions on the others—the classic interdependence of oligopolists.

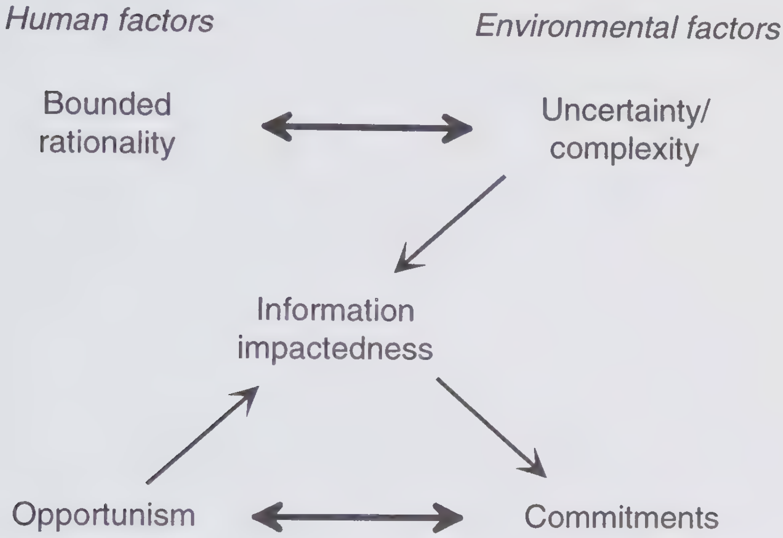
Harvard economist Richard Caves[3] asked the question, 'What is going on in business schools in the corporate strategy/business policy literature, what is going on in the organisation structure literature, and in particular what is happening at the boundaries between the two?' Caves considers why there is something called corporate strategy at all and makes this point: 'The unifying concept of corporate strategy first emerged in the study of business decision-making to provide business managers with a simple and operational method for devising a long-term plan to assure the maximal attainment of the firm's objectives. The firm rests on contractual relations that unite and co-ordinate various fixed assets or factors, some of them physical, others consisting of human skills, knowledge and experience—some of them shared collectively by the managerial hierarchy. These factors are assumed to be semi-permanently tied to the firm by re-contracting costs and perhaps market imperfections.'

In classic economic language, Caves implies that the world of strategy belongs or is limited to those organisations that are not engaged in perfectly competitive markets. Strategy is relevant if firms begin their planning with fixed collections of factors of production which they are not free to sell and buy in the way that the classical economist's model assumes. An implication is that the firm, in its long-run planning, will tend to maximise the quasi-rents[4] to these fixed factors. This, of course, begs the questions: what are the circumstances that lead to 'imperfectly competitive' markets and exactly what are those resources that cannot be bought and sold?

Market imperfections and transaction costs

Oliver Williamson,[5] in what he called the transaction cost theory of the firm (TCT), sheds some light on these vexing questions. In doing so he not only addresses the question of what determines corporate strategy but illuminates the complex question of what determines a corporation's internal organisational structure. The structure of the TCT is simple and enlightening and is presented in figure 2.2. According to Williamson and his disciples, corporate structure is driven by the desire to economise on decision-making costs while meeting the efficiency and profit motives normally assumed. The primary driving factors in corporate decision making centre on two human factors—bounded rationality and opportunism—and two environmental factors—uncertainty and complexity, and commitment. Opportunism and uncertainty determine the information structure facing the company (known as information impactedness).

Figure 2.2: Structure of the transaction cost theory



Source: Adapted from O. Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: Free Press, 1975.

Bounded rationality and uncertainty/complexity

In making strategy decisions, the problems facing senior management are that these decisions are rarely, if ever, characterised by unique, good solutions nor are the true problems themselves all that clear. Consequently, we will explore ways of defining a limited range of good solutions rather than trying to identify every alternative in a search for 'the best'. In doing this, we accept that strategic decision making cannot be wholly encompassed by totally rational models of decision making.

Most standard textbooks on decision theory elaborate a decision logic of a particular type—the comprehensive 'rational' decision. One specifies goals and generates a set of options or alternative courses of action; these in turn result in a search process to collect data about oneself, about the world, about competitors and so on. After rigorous analysis of the data, the options are then evaluated in terms of one's decision criteria, which is the operational way of dealing with goals; finally the decision maker chooses the best option.

Despite the basic rationality of such a schema, organisations do not systematically generate the complete set of options for most decisions, including major ones. Nor, in the process of sorting among the options and selecting one, do they systematically use all of the algorithms that might be suggested by decision theory. Instead, it appears that in the world of oligopoly, firms have a pattern, which we will call a 'belief system', by which key decisions are made to radically reduce the number of alternatives that they generate and screen, the range of information that they bother to collect and so to simplify the way in which they go about the selection process.

A primary concern on our part will be to explore this notion of corporate belief system. For this purpose, we will rely on the concept of 'bounded rationality': the world is too complex and too uncertain to rely on exhaustive rational analysis. To cope with this degree of complexity and uncertainty, we rely on simplified models of how the world works. Even if business conditions create problems outside our past experience, we tend to rely on previously developed belief systems or mind-sets about the world in order to reduce the problem to manageable proportions.

Strategic decisions arise when the complexity and uncertainty is so large that no optimal or dominant decision can be found.

Some readers may find this disappointing. Managers would normally prefer to compete in circumstances where they are confident that they can be successful. But it is useful to consider the game of chess as a point of reference for the standards we set. For most people, chess is a complex game, yet its structure is remarkably simple:

- there are only 32 pieces on a board of 64 squares;
- each piece has a strictly defined set of moves possible;
- every move is known with certainty by the other player; and
- there are only two players.

Yet this game is an enormous intellectual challenge for most people.

On reflection, we can recognise that most strategic competition in business will be far more complex than a chess game: there are usually more players (including not only competitors but suppliers and customers), there are many more moves permitted, and there is far less complete information as to the actual moves that have been made by your organisation or your competitors. Under these conditions, managers base decisions on heuristics: intuitive rules of thumb developed with experience over time. As in the game of chess, however, not all heuristics are equally powerful or transferable to new circumstances. A grand master at chess can play 50 games simultaneously and win most of them, yet be a complete novice at the oriental game of GO. Our approach to strategy in this book flows from the perspective that good strategists are learning to be chess grand masters while also proving competent at GO (or vice versa).

Take a simple case—assume that you are a member of the Board of Directors of CSR, the Australian natural resources and building conglomerate, which is considering its next diversification move; how do you go about this? The number of options that you could look at is virtually infinite. There is no screening process that will allow you to reduce these to a manageable number unless you are willing to make some very strong assumptions about the management of major companies: what you are good at; how competition works and how one succeeds. Assumptions like these allow you to screen down the diversification choice to a manageable set of alternatives. This is not a criticism of rational models of decision making. For strategic decision making within organisations, the range and manner in which the alternatives are examined is sharply reduced and constrained by a set of beliefs shared at senior management level about how to compete successfully.

For instance, we might think of CSR as having a particular skill at bulk materials handling (derived from its historic position in sugar). This appears to be one of the consistent threads of the CSR model in years past—they saw themselves as particularly able to handle bulk materials, and to do so into export markets. In line with that view, CSR diversified into coal, minerals, oil and gas, as well as building materials. That is a particular form of corporate strategy. CSR could have seen itself instead as a food company, ended up in the jam business and taken over IXL before John Elliot did. Those opportunities and many more existed.

In 1987 and 1988, CSR dramatically changed direction and divested most of its holdings in coal, minerals, and oil and gas. Together with the divestitures, it began a substantial new acquisition program, particularly in building products in Australia and overseas. This shift focused its activities on sugar and building materials. The extent of these changes and the specific nature of the acquisitions suggest a new internal perception of the firm and its opportunities.

For the majority of important choices made by most firms, the set of alternatives open to them and about which they know is staggeringly large. They must, therefore, use some screening mechanism both to look at the outside world and to look at themselves. It is the screening process that determines most of the outcome, rather than the precise way in which a limited set of options is subsequently analysed. So we are interested in what is going on in people's minds that leads them to reject 99 per cent of all the alternatives without serious further thought. Understanding that process tells us a lot about organisations. Managers must look both inside and outside the organisation and, in so doing, they tend to employ a set of filters that govern what they see and how they see it.

As an illustration, consider a recent substantial acquisition in Australia. North Broken Hill acquired Peko Wallsend.

- How many companies did North Broken Hill consider before they settled on Peko Wallsend as the target?
- How many mining companies are there in Australia?
- How many resource-based companies in Western economies are in businesses related to that of North Broken Hill?

An answer to the last question can only be offered if the top management team has a belief system about how the world works, i.e. *a theory of the business.* The top management team needs a theory of how to make money in its business if the organisation is to be effective. That theory allows them, very quickly, to discard most of the alternatives. Did North Broken Hill stop and say, 'Should we go into semiconductors?' They probably didn't stop and think about cosmetics for very long. It is doubtful that they thought about biotechnology much at all, unless it was for some new process for leaching. The top management team has some notion of what the firm's skills are; what domain it operates in; where it has a comparative advantage; how it can ignore 90 per cent of all the alternatives. The belief system allows the company to collect just enough information to validate management's intuition and hunches.

One of the most important of a manager's filters is what he or she believes about profitability and, particularly, about differences in profitability. Making strategic decisions is a critical part of the manager's belief system. A manager has a fundamental assumption about the basis of superior or inferior profitability amongst competitors. There are essentially two extreme viewpoints on this subject and managers and firms will tend to accept one or the other. One is a belief that while there are profitability differences among firms in an industry, they are basically correctable. Implicit in this view is the idea that the problems of poor performers are what might be called inherent operating problems and therefore can be corrected if management is more effective. This is a reasonable and common view of the world. Alternatively, performance differences among competitors may be attributed to structural aspects of the industry, effects that will persist indefinitely unless there are significant changes within the industry, for example a major change in technology. Certainly managers and firms will differ in the details and sophistication with which they elaborate these two positions. Nevertheless, simply stated, they capture the essence of two very different ideas about the basis of competitive success.

It is not unreasonable to suggest that the first of these two ideas has motivated 95 per cent of all cases ever written in corporate policy, whether at Harvard or elsewhere—cases which tend not to be particularly concerned about competitors. Rather, they are concerned about markets and the firm. Embedded in this orientation, but not very well articulated, is an assumption about the basis of long-term profitability—the assumption that major differences in profitability derive from differences in managerial effectiveness. Adoption of the alternative viewpoint drastically affects the way in which one approaches a large number of problems, particularly strategy problems. Starting with a belief that in oligopolistic competition you expect to see significant differences in performance among competitors and that these will be structural and hence not reversible, you will be disposed to consider a different set of strategy options. These different positions are purely questions of belief systems.

Commitment and opportunism

Earlier we discussed the commitment of resources as one of the defining characteristics of strategic decisions. What are the environmental characteristics that determine the level of commitment? The three most important characteristics of commitment are *asset specificity*, *small numbers contracting*, and *complementary assets*. Each can operate separately but it is usual to find them operating in conjunction with one another. And it is the existence of these three characteristics of commitment that lead to circumstances ripe for opportunism.

Consider the example of an aluminium smelter once again. The market for bauxite is heterogeneous and quite thin and bauxite refineries are generally oriented around a specific mine's ore. An efficiently sized mine costs around three-quarters of a billion dollars and a refinery anywhere from three-quarters of a billion to over a billion dollars. For either the mining or refining operation to sell or purchase ore on the spot market would be quite hazardous under these circumstances. So generally two options arise—either the parties write long-term contracts or they engage in some sort of partnership (and perhaps complete integration). However, the problem with long-term contracts is that they must be very long (normally up to twenty years) to justify the initial investment in capacity. This creates a serious problem since the contract must attempt to cover *ex ante* all those *ex post* contingencies that will arise over the life of the agreement. Therefore, the contracts remain incomplete,[6] providing the opportunity for expropriation by one or the other party should the environmental circumstances change, which they no doubt will. The alternative in this case is to form an equity joint venture. Under these circumstances the incentives for opportunism are reduced since both the mine and refinery share in the gains, no matter to whom they initially accumulate.[7]

Rarely is a company a one asset show. Companies exist because of the interrelated nature of the assets that they bring to bear in the production of goods and services. Having taken into account the efficiency gains from joint asset investments in distribution and labour, Coles-Myer operates retail grocery operations in conjunction with K Mart's retail durable and non-durable goods operation. As noted earlier, Procter & Gamble purchased Max Factor to use its drugstore distribution capacity and its market research know-how more efficiently. These are examples of the use of complementary assets. Complementary assets allow the firm to gain both economies of scale and economies of scope. Economies of scale are the gains from larger operations and mainly reflect the spreading of a fixed cost investment, such as the trucks or computer systems for a distribution network (e.g., our Procter & Gamble drugstore distribution example). Economies of scope reflect the efficiency gains from the production or selling of related products and services. For example, BIC gained economies of scope by making razors using its know-how associated with plastic moulding technology developed for disposable ballpoint pens. Complementary assets are powerful tools in the development of a corporation's product and production strategies.

The existence of complementary assets creates incentives for firms to integrate vertically or horizontally, either through contractual arrangements or a direct merger. In this sense asset specificity is a special case of a complementary asset; and just as in the case of asset specificity, complementary assets create opportunism incentives. For example, P&G's marketing research division invests heavily in gathering information about family consumption and this knowledge can be used across any number of a range of products. The question becomes quite simply, 'Who pays for the marketing research department's investment?' Making marketing research a profit centre, or spreading the cost evenly or even based on sales volume, is inefficient since each product division still has an incentive to overuse the marketing research division. The only real solution (and one that isn't widely used) is to make each product division an investor in the marketing research division. In the economist's jargon, complementary assets have a 'public goods' problem. Either the potential users refuse to pay their share of the initial investment cost and/or, once the investment is made, have an incentive to overuse the asset.

Perhaps the complementary asset most commonly referred to is information or *know-how*. Know-how is information that is both an input and output to the firm's strategy and operations. Proprietary know-how is a complementary asset within the firm but has little value outside the firm. This might be because the information is firm-specific or requires other assets, such as firm-specific human skills, to implement it effectively. A source of strategic advantage to the firm, it has all the problems of opportunism within the firm (our P&G marketing research example). Non-proprietary know-how has value everywhere (e.g. industry-wide) and while a strategic advantage to the firm if it can be kept secret, its public good characteristics are quite generic. Should a competitor obtain the information it has achieved a coup since it has avoided the initial investment costs of acquiring the know-how. Michelin is one of the tyre industry's most intensive R&D companies, routinely spending around 34 per cent of total industry R&D. It is also one of the most secretive companies, refusing to give plant tours (even to President de Gaulle) and limiting employee access to their own work areas. As François Michelin noted 'you need ten years to develop a machine and five minutes to understand it, and thus copy it'.[8] A classic example of opportunism and know-how played out in 1993 in Germany is the Lopez VW-Opel drama described in Case 2.4.

Strategic decisions arise when specific and complementary resources must be committed to specific purposes with high costs of reversing the commitment.

Case 2.4 Know-how and opportunism: the case of Opel-VW

The problem of protecting a firm's knowledge base is illustrated by the controversy over the employment of Mr Jose Ignacio Lopez by Volkswagen in 1993.

Mr Lopez was recruited by VW from General-Motors, where he had been responsible for cost-cutting in GM's European operations. GM claimed that Lopez took with him secret documents from Opel, GM's German operation. Some VW employees were alleged to have spent several days typing data obtained from Opel into VW's computers. VW denied the charges, and cleared Lopez as a result of an internal investigation. It was even suggested that GM had planted the documents on VW to undermine German industry. Regardless of whether Lopez took the information or not, his case illustrates the more general problem of securing a firm's investment in know-how.

Proprietary knowledge is sometimes protected by patent or intellectual property law. In order to qualify for such protection, it must be capable of being expressed in a legally defensible form. However, some of the most valuable know-how of a firm cannot be given such concrete legal expression. It may come in a variety of intangible forms such as the skills built up over many years of experience and problem-solving, or informal relationships with customers and suppliers. This knowledge is vulnerable to opportunistic behaviour on the part of those who possess it and who can effectively sell their knowledge to the highest bidder.

In the case of Lopez, perhaps the most serious loss for GM (and the gain for VW) was not the specific information he is alleged to have taken with him, but the more general skills and experience acquired at GM, which VW can now exploit without incurring the costs of a similar investment in skills and experience.

Solutions to know-how theft problems have been sought by redefining the contractual relationships underlying the firm. One solution lies in mutual hostage taking. Both the firm and the employee can make legally binding commitments that allow each to benefit from working together, but that punish defection on the part of either party.

For example, after Lopez left GM, the company required its board members to sign 'non-compete' clauses, that would prevent them from working for a rival company for three years after leaving GM. Such a clause might have prevented Lopez going to work for VW. This is not a perfect solution, however, since it can be difficult to get the courts to enforce such contracts. Without reciprocal commitments on the part of the firm, forcing such contracts on to employees may even prompt them to quit, bringing about the very loss of know-how the contracts were designed to prevent.

Better incentives can be devised utilising retirement benefits and share options schemes. In the latter case, employees are given a stake in the company provided they stay with the company for a specified period. Even these solutions have their problems, however. They are being undermined by the increased portability of pension rights. Shareholder activists are also coming to resent the use of 'golden handcuffs' such as reserved shares and options, seeing them as wasteful. But this is only true if the scheme fails to reward good performance. Otherwise, such schemes may serve to protect the value of a shareholder's investment.

Source: 'Hanging on to know-alls', *The Economist*, 21 August 1993, p. 59.

Information impactedness

In the bauxite example we see both the problem of small numbers contracting, since each mine is linked to one (or a few) refineries due to economies of scale, and asset specificity, since each refinery must commit to specifications based on a specific mine's ore due to the uniqueness of that ore. However, we also see two other related problems which make up what we call information impactedness: *incomplete contracting* and the *ex ante/ex post valuation* of the decision.

Incomplete contracts arise due to the fact that all the contingencies of a decision cannot be appropriately accounted for, either because they cannot be foreseen or because they cannot be measured with sufficient accuracy to be useful. In the bauxite example it would be difficult to pre-specify how the mining company and refinery would react to changes in technology over a twenty year contract since those changes are essentially unpredictable. *Ex post* valuation concerns arise as to who gains what as the contract matures. Again, suppose that the bauxite venture becomes hugely profitable. Which portion of its new-found profitability is to be attributed to mining and which to refining when both parties have every incentive to overstate their efficiency gains?

The *ex post* valuation issue also arises within firms and is particularly important in the area of complementary assets. Let us belabour the P&G example once again. In the Max Factor acquisition, it is clear that P&G assets were responsible for the revival of Max Factor, but which assets? Was it the distribution system, the product management system, or marketing research? The answer is, of course, all three but each brought different levels of asset commitments to the take-over and each has every incentive to take the lion's share of the glory.

Information impounds on economic decisions because of its fundamental asymmetry. This asymmetry shows up in two ways. First, there is asymmetry over time. The further in the future one must forecast, the greater the likelihood of an erroneous forecast. One's knowledge does not decrease as one moves further forward in time. The *ex post* valuation problem is one example of information asymmetry with respect to time. The continuous recontracting that is seen in strategic joint ventures is driven by the evolution of the information available to the contracting parties. Second, there is information asymmetry between economic agents. For example, a manager possesses information about the performance of a company that shareholders both want and need. However, a manager's performance reward is based upon the release of his/her own private information about his/her efforts and the company's performance. Both managers and shareholders know there is an incentive to 'exaggerate' the level and importance of the manager's contribution but that does nothing to resolve the fundamental problem; and that is, no matter what the manager reveals, we know that the correspondence between the public information presented to the shareholders and the actual performance of the company is driven by both the manager's efforts and good or bad luck. The incomplete contracting problem is an example of information asymmetry between economic agents.

Contributions to the success and failure of strategic decisions are difficult to measure because the company's earnings include both a return to imperfectly contracted joint assets and a high degree of luck.

The resource based theory

Market failure and transaction costs do not, in and of themselves, imply that firms in such markets will have assets or resources upon which successful long-run strategies can be developed. The transaction cost theory focuses our attention on the preconditions that are necessary, though not sufficient, for strategic advantages to arise. Wernerfelt[9] argues that successful long-run strategies will be derived from the unique resource base possessed by firms. This idea is hardly new and shows up in the popular literature under the notion of competencies and capabilities, albeit not very rigorously defined. We have alluded to this idea earlier and now turn to the question, what makes an asset or resource possessed by a firm a true strategic advantage?

We can come up with a five point test of when an asset or resource possessed by a firm is strategically valuable, where strategically valuable implies that it can be used to gain a specific advantage over rivals. The five points are outlined in figure 2.3. The test is quite rigorous, requiring that an asset pass all five criteria. We have little doubt that 99 per cent of firms fail the test.

Imitability

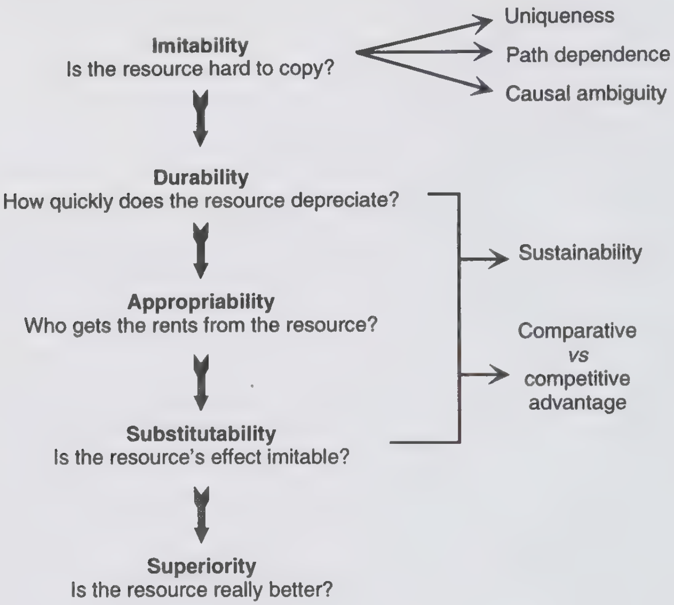
Strategic assets or resources are non-imitable. The non-imitability of a resource can arise for three reasons: *uniqueness*, *path dependence* and *casual ambiguity*.

The resource can be unique in that there are limited opportunities to duplicate it. The Escondida copper mine in Chile is a unique resource because of the quality of the ore and the ease with which it can be extracted. Non-imitability normally arises because of combinations of resources rather than in a single resource. BHP is one of the few steel companies in an OECD country that is fully integrated. That integration, which goes against conventional wisdom, has allowed it to develop its unique hot briquetted iron based steel production technology. It is the combination of mining, steel and oil and gas technology that has led to the unique process.

Path dependence occurs because the path to a specific point is important in the development of an asset. Take the example of Corning. It is a truly unique company because it is made up of little more than a mixture of joint ventures. Corning's history has made it successful at the formation and management of joint ventures simply because it has done so many. Few companies, if any, could completely duplicate its expertise.

Finally, non-imitability can arise because of causal ambiguity. One thing that

Figure 2.3: **The five determinants of a strategically valuable resource**


Imitability
Is the resource hard to copy?
Uniqueness
Path dependence
Causal ambiguity
Durability
How quickly does the resource depreciate?
Sustainability
Appropriability
Who gets the rents from the resource?
Comparative vs competitive advantage
Substitutability
Is the resource's effect imitable?
Superiority
Is the resource really better?

protects Corning's skills in the management of joint ventures is the fact that no one knows exactly why it is so good, other than the fact that it has been successful in the past. In most cases, managers may have an understanding of what they think has caused a resource's unique strategic importance but the linkage between cause and effect is simply too complex to fathom the true relationship.

Durability

An asset may be unique but if that uniqueness is transitory, the strategic advantage is limited. It is interesting to note that computers is one of the least patented whilst machine tools is one of the heaviest patented of technologies. This is predicated on the fact that machine tools can last up to 50 years or more while computer product and technology life cycles are extremely short. Machine tool companies rely on patents to protect heavy investments in a long-lived technology. Computer companies rely on speed and new products to stay ahead in a race where intellectual spill-over is rampant.

Appropriability

Resources may be unique and they may be durable but a question arises as to who ultimately earns the rents from the asset? For example, BHP currently owns 57.5 per cent of the Escondida mine in Chile. Although possessing a unique resource there is no indication of how much of the benefit from that mine's characteristics accrues to BHP since BHP purchased its share in the open market. Even if one were to argue that BHP possesses unique skills that would allow it to increase the efficiency of the mine, it is unclear how much of that efficiency gain BHP would be able to earn since to make the return it requires the mine!

Substitutability

A resource may be non-imitable in its complete form but it may be imitable in effect; in other words, it may have a good substitute. If we compare the two giant construction equipment companies, Caterpillar and Komatsu, we see two different companies. Caterpillar's strength lies in its distributor network and product variety. Komatsu's strength lies in its engineering and technology. However, at the end of the day both companies earn approximately the same return on assets, even though they go about satisfying customer needs in different ways.

Substitutability is probably the most constraining factor on the strategic value of a resource because it implies that there are many possible paths that are equally good at achieving an end. Even in the case of BHP's ownership of a high-quality low-cost mine, its return to that asset is inherently limited by the quality and cost of the next best mine or of better extraction or refining technologies. Substitutability shows quite clearly that imitability alone is immaterial.

Superiority

The final test might be called the 'so what' test. In the end, does the resource bestow a large enough benefit on the firm so that it materially matters either to the bottom line or the strategic direction of the company. The resource can be non-imitable, durable with all its benefits accruing to the company but if the returns are not material, who cares!

The resource-based theory of the firm provides focus for strategic development because it concentrates on the development and definition of unique firm-specific resources as the source of competitive advantage. Market failure and transaction costs provide the opportunity for strategic development but without strategically valuable resources the opportunity would be unfulfilled.

Effective strategy is based on the application of strategically valuable resources and assets in oligopolistic environments.

Summary—the strategy model

Our discussion to this point holds several implications for the market environment in which strategy is to be employed. The concept of corporate strategy applies to market environments that would be described as imperfectly competitive. The strategy model implies that competing firms can earn rents and that they can serve the same markets by quite different input combinations; hence the products they offer to the market may be multi-dimensional and heterogeneous. In such markets, a firm's strategic strengths and weaknesses can be meaningfully evaluated only with respect to identified rivals. Fundamentally, strategic choices are made relative to specific rivals in a competitive world.

Hence, the strategy model has particular relevance in a market structure of differentiated oligopolies. The concerns of corporate strategy do not really lie with monopoly nor with perfectly competitive firms, but in the intermediate zone of oligopoly, and particularly of differentiated oligopoly where firms do not sell identical products or commodities nor do they produce them in the same way using identical resources.

The model of strategy that we are developing represents a complex and simultaneous interaction between the individuals making strategic decisions and their markets and environment. Strategic behaviour is rational and purposeful, derived not just from experience but from the interplay of experience and foresight. Strategy is developed based on the decision maker's information and assumptions about what actions are available, how the other competitors will react, what the possible environmental contingencies are that could occur, and what the payoffs are from specific combinations of company and competitor actions. What makes the strategic decision so complex is the fact that the payoffs from each company's actions are critically linked to the interrelated decisions being made by both independent and related competitors as well as to the whims of nature. As Sun Tzu put it so aptly, 'know the enemy, know yourself; your victory will never be endangered. Know the ground, know the weather; your victory will then be total.'[10] Alas, if it were so easy, as anyone watching a nightly weather forecast will attest.

The manager and society in corporate strategy

Up to this point we have purposely left out the managerial and societal imperative. It is clear, however, that the development of corporate strategy is neither achieved independently of the individuals making the choices, nor of the social environment within which they are operating. Both the personal values of the key decision makers and the broader expectations of the society in which the firm operates impinge heavily on both the method of developing a strategy and the content of that strategy. Both form part of the goal structure of the firm. In other words, we recognise that however useful the notion of long-run profit maximisation or long-run value maximisation may be for some forms of analysis, in practice individual value systems can and do affect outcomes. You cannot push a firm to take certain forms of risk or cope with certain forms of technological change if this runs counter to the underlying culture and value system of its senior executives or its board of directors. Similarly, there are certain choices that every firm must make to be consistent with what society expects of the firm. No matter how 'good' a decision may be, the consequences of failing to meet certain societal expectations tend to be rather adverse. The other aspects of consistency are that major choices must be consistent with the strengths and weaknesses of the firm; and that they must be consistent with the changes in technology which create both threats and opportunities for the firm.

In considering corporate strategy, these assumptions incline us towards certain questions. What sets of choices are really open to a firm and which of these is really determining the outcome? Why does the firm appear to be running into certain kinds of problems? What will need to change in order to resolve the problems? These questions have long been recognised as pertinent to corporate policy and are critically related to the goals that the firm can and does set for itself.

Goals

In warfare, the goal of military strategy is often seen as winning the battle or the campaign. Yet, at the higher level of geopolitical strategy, the goal is to establish peace on more favourable terms. To quote von Clausewitz, 'war is an act of violence intended to compel our opponent to fulfil our will'.[11] This new peace may entail occupation of a rival's territory and even subjugation of its people. More frequently, warfare has resulted in some realignment of borders, the payment of reparations, and the replacement of the ruling elite of the losing country by a new elite more 'in harmony' with the wishes of the winner. This analogy from military strategy has considerable power when taken across to business.

For most companies, the fundamental restraints on growth and profitability are competitors. In this general sense, we include not only direct competitors but organisations which compete for similar key resources: including, for example, access to distribution channels, or graduates in a particular branch of electrical engineering and computing science. We might then see the goal of the organisation as engaging in competition (limited warfare) with other organisations in order to establish a new equilibrium (peace on our terms). This view of strategic competition is elegantly set out by Bruce Henderson who proposes a biological niche model of strategy.[12]

Underlying this perspective is another issue: do organisations have goals? Or do only the participants in the organisation (its shareholders, managers, customers, etc.) have goals? There is an interesting conflict here between two quite different views of the goals of the firm. Neo-classical economics has traditionally assumed that the goal of the firm is profit maximisation—or, more accurately, maximisation of the long-term value of the firm for its shareholders. By contrast, in newer theories of organisation economics, the firm is seen as a set of stakeholders who come together through a nexus of related contracts. The continued survival of the organisation requires that every stakeholder receive at least the minimum payoff that is required to command their continued co-operation. In this view, there is no reason to expect that only the shareholders will be able to claim any residual value (i.e. a pure profit above the minimum payments to every stakeholder). Indeed, there has been a dramatic increase in research into possible conflicts between principals (the shareholders) and their agents (the managers). This research points to major decisions (e.g. financial structure, dividend policy, executive remuneration, diversification) which are made in ways that may advance the interests of managers above those of their shareholders. Michael Jensen, for example, has argued that the surge of leveraged buyouts (LBOs) is best understood as a natural market response to the failure of most public companies to act in the interests of maximising shareholder value.[13]

Managerial and societal goals impact on corporate strategic thinking in that they limit the choice of actions and affect the level of payoffs. For example, corporate thinking with regard to environmental issues has evolved radically over the last ten years. Whereas a company may have made a decision that was profit maximising but environmentally dubious years ago, the likelihood that such a decision would be made today is low. And it is less likely today not only because the managers are now 'environmentally friendly', but because the mores of the societies in which they operate value such actions and are willing to support less than optimal decisions made with the environment in mind. For example, Exxon's pitiful behaviour in response to the Exxon-Valdez disaster not only generated the ire of the likes of Greenpeace but also the New York, California and Massachusetts state pension funds. While the chairman of Exxon could refuse to accommodate Greenpeace activists, he was hardly in the position to ignore his three largest shareholders. Exxon became the environment's friend not because its chairman had become one with nature, but because he didn't want to become one of the unemployed.

Although discussing the different views on corporate goals is interesting, we will assume throughout this book that the pre-eminent goal is to maximise shareholder value. It is important to recognise, however, that this is a very abstract goal. In a world of uncertainty and complexity, managers may act in ways that are not easily or obviously linked to this goal. However, the goal of maximum shareholder value is one that is consistent with the corporation as a human and social entity. To the degree that the corporation's strategy is affected by the values of society, the actions of the corporation will reflect societal goals; slowly perhaps, but they normally get there.[14] The goals of corporations are rarely in long-run conflict with the goals of society. As Charles E. 'Engine Charlie' Wilson put it to a Senate committee in the United States, 'Sir, what is good for America *is* good for General Motors, and vice versa'. And when he said it there was little doubt that it was true. In addition, to the degree that the personal values of managers are consistent with the efficient or superior operation of the company, they will survive. One need do little more than look at the littered graveyard of ex-CEOs to see that a manager's personal values matter only if they have positive cash flow implications (or their family owns the company!).

Summary—the role of corporate strategy

There is no single basis of competitive advantage that applies to all industries nor, for many industries, is there one dominant basis of competitive advantage. For some industries there is no significant basis for competitive advantage at all. While firms may survive without achieving competitive advantage, exceptional performance is likely only for the firm that, whether through luck or insight, manages to exploit some basis of competitive advantage within the industries open to it.

It follows that corporate strategy is particularly concerned with identifying business opportunities for which a firm either has or can develop a competitive advantage and then moving to exploit and enhance that advantage. Many firms simply attempt to do something that another firm is doing or that another firm may also attempt. Alternatively, they sometimes take the opposite route and do something because another firm is not doing it. They enter businesses in which they have no competitive advantage and indeed may have a competitive disadvantage. They often rely on the faith that if someone else is operating in the business they can too (or alternatively that they can operate in a business that other firms have avoided). Sometimes there is a belief that through extra effort or talent they will do better than their competitors. Though the incompetence of competitors does occasionally provide great opportunities, all the evidence indicates that generally, in the absence of real competitive advantage, a firm will have a tough time with few real rewards ever won from the business. To quote Sun Tzu for one last time, 'that which depends on me, I can do; that which depends on the enemy cannot be certain'.[15]

The viewpoint given here, and to be presented throughout the book, is that effective corporate strategy is developed from taking advantage of opportunities (and avoiding threats) through the skilful use of unique assets and capabilities. More effective strategy arises from the better recognition of potential opportunities and threats and the more skilful development and deployment of assets and capabilities. Strategy is not a case of *deus ex machina* but of understanding and construction. The strategist is not a spiritualist but an architect; able to visualise the building before it is built and to guide its construction from the ground upwards.

Chapter 3

Belief systems and culture

Where belief is painful, we are slow to believe.

Ovid (48 BC–18 AD)

Behaviour is not random but purposeful. The top management team (TMT) of an organisation makes decisions and acts with the intention to achieve goals. Yet these goals are often complex, somewhat abstract and ever evolving. For example, 'maximising shareholder value' does not provide clear guidance as to the tradeoff that can arise between a higher reported profit this year and an intangible investment in the future competitive position of the business. Even when the goals are clear, it is far from obvious how each of the many decisions managers make daily result in any specific outcome. When we are changing the product line, delivery and service terms, prices, advertising themes and so on simultaneously, the cause and effect linkages are hard to trace. In this world of goals that are not completely clear and of complex and ambiguous causality, a management team can act effectively only if the team shares a *belief system*; in other words, a set of tenets about the way to compete and succeed in its business.

This belief system is an integral part of the corporation's culture. While the belief system of management enables coherent action on the part of a firm's top management, the corporation's culture allows the firm as a whole to operate within informal, yet clearly recognised, rules. We can define corporate culture in the same manner that we define social culture—the language and formal and informal rules and precepts that lubricate interaction amongst social and economic agents. Both belief systems and culture evolve in uncertain and complex environments and are adaptive rather than optimal. As we will see, both serve to facilitate interaction and decision making in a world where actions cannot be monitored perfectly and decisions must be made with little or no quantifiable information. At the same time, top management beliefs and a corporation's culture can blind the firm to reality even when that reality is clear and quantifiable.

The objectives of this chapter are:

- to examine the critical role played by the belief system of a TMT;
- to understand the inherent boundaries of human decision making and how a manager can limit biased decisions by recognising these limitations; and
- to provide a means for comprehending the role of corporate culture in understanding a firm's development.

The core ideas of the chapter can be illustrated with a story adapted from Hogarth.[1] Think of the decision made by a waiter to divide his time between various tables of customers in a restaurant. If the restaurant is crowded, some customers have to be given rather cursory service; only a few can be served well. Suppose that the waiter believes (on the basis of experience or of instruction during a training course) that older customers tend to tip more generously than younger customers. On the basis of this belief system, the waiter will tend to err on the side of giving greater attention to older customers. If, in fact, all customers behave the same way (and tip on the basis of the actual service they receive), the waiter will indeed receive larger tips on average from the older customers. So the feedback he receives confirms or validates his belief system about people's behaviour. The outcome is consistent with his expectations; so there is no cognitive dissonance or stimulus to change his behaviour. Even though his belief system is not a good model of the real world, it simplifies the waiter's task (deciding who should receive preferential treatment) and is not contradicted by information that challenges this (since the occasional good tip by a young customer can be discounted as 'the exception that proves the rule'). The waiter may even go on to write a famously successful book on *How To Be a Successful Waiter* chock full of convincing anecdotes and supporting facts and figures!

What challenges does this anecdote raise? First, it points to the need to distinguish carefully between normative, or inductive, theories of decision making (how a rational person or group should make decisions) and positive, or deductive, theories (how they actually do make decisions). Our analysis of strategic decisions must keep this distinction very squarely in mind. If normative rules of decision making are to be developed they must be supported strongly by deductive evidence. Second, the story tells us to be attentive to three matters:

- the power of a belief system—the waiter can estimate the customer's age and swing into action without a moment's hesitation;
- the stability of belief systems—since there are no data for an extended period to unsettle us; and

- the vulnerability created in an organisation by its belief system—suppose that younger customers do not return, given their experience of inadequate service.

The themes of the power, stability and vulnerability of belief systems and culture will be central to the issues explored in this chapter.

Rational decision making

We can outline the requirements for rational decisions as a six-step process:

1 *Define and structure the problem.* This may prove to be the most difficult issue of all. One important component of the task is to identify who is (are) the real decision maker(s).
2 *Identify the criteria against which alternatives will be evaluated.* In many cases, strategic decisions may include multiple objectives (e.g. improving the long-term competitive position of a business without reducing its current profit contribution; or gaining customers without triggering a price war).
3 *Determine the weights to be assigned to each criterion.* This may present severe problems of commensurability (e.g. it may be very difficult to express certain qualitative changes in business position in quantitative terms).
4 *Identify the possible alternative courses of action.* Note though that this does not imply that every possible alternative be examined—the process of search (and analysis) is costly and takes time. Hence a rational process is one that stops when the cost of further search exceeds the expected value of new information.
5 *Evaluate each alternative against the criteria and assess the uncertainties.* Here, again, the search for information must have a rule for stopping.
6 *Compute the optimal decision.* This is normally defined in terms of the alternative with the highest expected value (which may be expressed in dollars, but could be calculated in units of expected utility).

This outline of rational decision making is a normative model; it tells us how we should make decisions. Over the last 40 years, research has focused on the gap between actual human decision-making processes and this normative model. A major early contributor to this descriptive approach was Herb Simon who developed the concept of bounded rationality. This idea, briefly discussed in chapter 2, sees individuals as attempting to make rational decisions but falling short of the normative model because of limitations on intelligence and information-processing capability. In later work, March and Simon went on to suggest that managers do not look at all the possible alternatives; rather, they search only until they find a solution that meets a certain acceptable level of performance. This view of decisions is known as satisficing and is at the heart of the notion of bounded rationality. Let us now turn to what makes rational decision making so difficult to achieve.

The limits of rational decision making

Since Simon's early work, the field of behavioural decision theory has developed enormously. Major contributions have been made by cognitive psychologists (e.g., Tversky and Kahneman), by decision theorists (e.g., Hogarth and Einhorn), by economists (such as Richard Thaler) and organisation theorists (e.g., Karl Weick). One central thrust has been to develop a body of understanding of how consistent biases occur in human decision making; that is, the heuristics or rules of thumb people use in making judgements are often flawed, particularly when probabilistic judgements are involved. However, to address all the limitations of human decision making is a book in itself. The reader is referred elsewhere for a more complete study of the issue.[2]

For our purposes, we are concerned about the broader question of how managers make sense of the world. In doing so, three constraints on decision making are important at this point in our discussion: (1) the mental limitations of humankind, (2) the effects of framing, and (3) representative thinking.[3] Our discussion of bounded rationality in chapter 2 highlighted the mental limitations of humankind and we will, therefore, limit ourselves to simply pointing out that this fact is the basis of all other biases found in decision making. Our focus will be on framing and representative thinking.

Many decisions are driven by the *framing* of the problem at hand. For example, suppose I have just given you $2,000. I now ask which you would prefer:

A1. I give you an additional $1,000.
A2. I toss a coin. If it lands heads I give you an additional $2,000 and if it lands tails I give you nothing.

Faced with this choice most people will choose option A1. Now, suppose I give you $4,000 and make the offer of the following choices:

B1. You give me $1,000.
B2. I toss a coin. If it lands heads you give me $2,000 and if it lands tails you give me nothing.

Most people will now choose option B2! The reason this is so interesting is that the two sets of propositions represented by A and B are identical—a certainty of $3,000 versus a 50-50 chance of receiving either $2,000 or $4,000. The difference is the way in which the problem was framed—one as a gain and the other as a loss. The implication of framing effects is that the presentation of the problem, or how the problem is perceived, will affect the choice made by the decision maker.

The implication of framing effects for managers is dramatic since it implies that how the issues are structured will determine the outcome. From the above example, it is clear that if you want to bias choice towards the safe outcome you should present the options in terms of a sure gain versus a possible loss. If your aim is to bias the decision makers towards the risky outcome then pose the problem as a certain loss versus a possible gain.

Framing does not only surreptitiously affect decisions but is also used to purposely bias people's perceptions. Take, for example, John Prescott's justification for BHP's purchase of an interest in Foster's Brewing and a steel and resources company continuing to hold a position in a brewing firm:

> The commitment is still there and the value creation is going on and everything has improved...
>
> It is not impairing anything we are doing at the moment, and the value creation in Foster's over the last year or two has been as great as the value creation in many of BHP's other businesses. The real bottom-line is, what is the potential for value creation in that asset now? The sunk price is, in a sense, the sunk price.[4]

Note how he attempts to anchor the decision as one of a definite gain. The decision to invest cannot, today, be looked on as incorrect because past decisions are sunk costs. Yet, in reality, the chairman of BHP is falling into a sunk cost fallacy by altering the frame around which the decision is being evaluated. Viewed based on performance, BHP's purchase of a 32 per cent stake in Foster's was a bad investment. Strategically, it made little sense as well in spite of the proclamation that 'BHP had a "good understanding" of some of the environments in which Foster's operated'.[5]

More than two centuries ago, John Locke pointed out that most thinking is associational. To understand representative thinking we need to understand the notion of a schema. *Schemas* are beliefs and propositions based on our personal experience. The great power of schemas is that we do not experience every event as unique and requiring complex study—rather, we process the event (a red light or a detour sign) through our pre-existing patterns of understanding. According to cognitive psychology, characteristics access schemas and this is where representational thinking comes into play. Decision makers associate characteristics of a problem with a schema and then proceed to apply that schema to solving the problem. The one major implication of this is that each decision-making episode is not unique. We do not develop a decision-making process that is tailored to the problem at hand. Rather, we examine the information available (an availability and framing problem itself) and associate it with a schema, or set of schemas, and attempt to solve it based on our existing understanding. Fighting the last war or solving a prior, rather than current, problem is an extreme case of representative thinking.

One of the best examples of representative thinking and the problems it can create is Sony Corporation's foray into movie and recording studios. This disaster arose because of Sony's mistaken belief that its failure to win the VHS/Beta VCR-standard battle was due to the market dominance of software over hardware. This was, of course, incorrect but Sony firmly believed that it was true. They

Table 3.1: Ten problems behind poor decision making

Problem	Characteristics of the problem
Plugging in	Gathering information before understanding the problem
Frame blindness	Setting out to solve the wrong problem
Lack of frame control	Failure to define the problem in more than one way
Overconfidence	Being too sure of assumptions and opinions
Shortsighted shortcuts	Relying inappropriately on 'rules of thumb'
Shooting from the hip	Believing you can keep all the facts straight rather than having an organised data system
Group failure	Assuming that lots of smart people lead to good decisions
Feedback failure	Failure to interpret feedback because of predetermined biases
Not keeping track	Assuming that experience will reveal its own lessons
Failure to audit decisions	Failing to create an organised approach to understanding past decision outcomes

Source: J. Russo and P. Schoemaker, *Decision Traps: The Ten Barriers to Brilliant Decision Making and How to Overcome Them,* New York: Simon and Schuster, 1989.

therefore focused future efforts on gaining dominance in 'software'; in other words, movies to be shown on television and through VCRs and laser disk players, and CDs to be played on CD players. The schema 'software beats hardware' dominated their thinking for almost a decade, significantly reducing their performance.

Avoiding decisions traps

Having highlighted some of the observed frailties in human decision making, what can be done about them? Russo and Schoemaker[6] provide a good overview of ways decision making can be improved. Table 3.1 outlines ten pitfalls to avoid in organisational and individual decisions. No set of rules can completely alleviate the obstacles we have outlined. However, understanding that these biases and errors exist takes us a long way towards increasing the likelihood of more appropriate outcomes to our problems and quests.

We can summarise these ten pitfalls with four simple rules: (1) understand the problem you are solving (avoid framing problems); (2) recognise the quality of your data and the amount you need (recognise your mental data limitations); (3) attempt to solve this problem rather than a past problem (avoid schema errors); and (4) recognise and document when you are correct and incorrect (avoid simply satisficing). All, of course, easier said than done.

Belief systems

The essential insight of the many research streams is that we deal with the extraordinary complexity of the 'real world' by simplifying it. A powerful analogy is the use of a map to find one's way in unfamiliar territory. The map is not a precise detailed replica but a highly simplified way of representing only those features (e.g. the layout of roads) that are vital to the decisions we are making. Using that analogy as a springboard, it is useful to think of a *cognitive map*—the way we simplify any particular aspect of life, from family to the firm to the football field or wherever.

If we use this notion of a cognitive map, we can visualise such maps at two distinct levels: the individual (manager) and a group (of managers) with shared views. As discussed earlier, individuals develop patterns of understanding or cognitive schemas to interpret events. When we move our focus from the individual, we recognise that the person is a part of, or connected to, many communities and networks. Being a member of any such community implies a nucleus of shared experience—and may result in a situation where group members hold very similar cognitive schemas on some issues. This obviously arises in the professions (e.g. law, accountancy) as a result of many years of similar professional education. As J.-C. Spender has shown, there are also schemas across many managers who work in the same industry—a situation he describes as an *industry recipe*. He comments:

> A recipe is a shared pattern of beliefs that the individual can choose to apply to his experience in order to make sense of it . . . A recipe is not a theory. Nor is it a formula, which is a statement of a theory . . . it is a guide to action . . . It is a set of heuristics.
>
> But the individual already socialised in a recipe is unaware of the processes by which it is generated. It becomes 'common sense', an uncritically accepted body of scarcely articulated knowledge.[7]

Although Spender emphasises the shared nature of recipes, his case studies suggest that some parts of the recipe are held by every firm and other parts are held only by sub-groups. In a sense, his research suggests that the more commonality in recipe between two firms, the more likely they are to be pursuing similar strategies (e.g. in market segmentation). This is exhibited in Case 3.1.

Case 3.1 Industrial recipes and iron foundries

Modern foundry practice is still rooted in technology developed around 1720, when it was discovered how to smelt iron with coke rather than charcoal. The most obvious feature of the foundry industry is its decline. The industry has shown a persistent decline in output tonnage, employment and industrial significance in the post-World War II period.

A number of constructs define the foundry industry's recipe. From these constructs, we can see a variety of possible futures. It is not clear whether the industry brings them together in a single way or whether there are equally viable alternative ways of thought. Comparing different firms suggests alternatives. One firm is anxious to reduce the quantity of mechanisable work, but can only go so far because of the shortage of skilled personnel who can do the high-margin skill-oriented work. Another foundry is keen to eliminate the skill consuming jobbing work and is concentrating on getting high-margin mechanisable work for its tightly controlled production lines. At the same time, both firms have either abandoned training their own skilled personnel or are just about to. It is not simply a matter of alternative answers to the same situation. These managements are seeing their situations differently, reaching for different futures by different paths.

These differences can be examined by way of cluster analysis, which shows the industry splitting into two groups (denoted A and B). The essence of the A-group's recipe lies in achieving a quasi-monopoly through careful management of the inquiries placed on the foundry, coordinating these with investment and training and recognising and fostering the subtle pattern of reciprocity. There is a rich mixture of ingredients, some related to the firm's organisation, some exploiting the way the market allows itself to become segmented, others recognising the changing abilities and expectations of the employees. The supply of skilled moulders is failing, partly because of the inadequacy of the industry's training and apprenticeship schemes, partly because of the determination of the craft unions to protect their members from dilutees and others even less qualified. The industry's young people want to be technologists not skilled craftspeople, they want to be managers of capital intensive production facilities that employ only semi-skilled personnel. Technology now allows such facilities to produce high quality castings which are accurate, have good surface finishes and are free from defects.

But the A-group's organisational and managerial system is different from the traditional foundry's. Technical control and effective coordination of the customer portfolios and the production capacity are crucial. As the lead times lengthen, the foundry must spend more time and money on developing patterns, chills, alloys, testing techniques and on achieving the requisite quality. But the up-market demand is such that many customers will share or even completely underwrite these costs.

Whereas the A-group is focused on niches and its members are relatively unconcerned with the overall industry trend, the B-group is vitally concerned and is struggling to deal with this problem. In this group, management's response to the dwindling supply of skilled personnel is to mechanise the production process, or rather, take on only that work which can be handled by the traditional process as currently mechanised. This leverages skilled personnel without redirecting the foundry into unskilled work.

Group membership

A-group members	B-group members
Chatwin's	Bo'ness Iron
Wm Coupe & Sons	Henley
Cruikshank & Co.	H & J Hill
Dudley	Ed Matthews
Forth Alloys	Newcast
Hemel Hempstead	Shaw & McInnes
Jas Maude	
Thos Seager	
Steel & Garland	
Wellman Incanite	

The difference between the two recipes can be illustrated with reference to one company, Dudley, which sought to switch from the B- to the A-group recipe when it was bought out by the present management. Although new technologists and marketing people came in, it was the senior management who had been with the firm previously who master-minded the switch. It was able to do so because its previous work with the new sand and metal technologies had shown it that there was another way. These changes, which shifted power from the shop floor to management were fiercely resisted. The new management eventually prevented any backsliding to previous methods by coming in over the weekend and physically destroying all the old moulding boxes and patterns. This burned the company's boats, committing it to the new A-group recipe.

The B-group firms illustrate how grim facts are ignored until they stare us in the face. Only then do they get down to the serious strategic business of changing their personal recipe, their habitual way of doing things. These managers know plenty about the A-group and they know its recipe does not ensure success or even survival. For many B-group firms, the risks of change still far outweigh the risks of staying put.

Source: J.-C. Spender, *Industry Recipes: An Enquiry into the Nature and Sources of Managerial Judgement*, Oxford: Basil Blackwell, 1989.

In addition to schema that are shared as a result of professional training or functional experience and those that arise from the industry context, we would emphasise the central importance of the schema shared by the top management team within any firm. We will call this the *belief system* of the firm to distinguish it from individual schema on one hand and the industry recipe on the other. Therefore, we can think of individual schemas as being grouped and modified into corporate belief systems and industry recipes as further groupings of belief systems across firms (again with some feedback).

The importance of a belief system is that it contains the core assumption of the firm's TMT as to what the firm is trying to achieve and how to go about that task. Consider the banking industry in Australia as an example. The industry recipe may well include widely shared ideas about the likely evolution of payment systems (as electronic transactions replace paper) and of the mix anticipated between revenue streams based on the institution's balance sheet (lending) and those based on fee income (e.g. from funds management and advisory work). But the top management team at the Commonwealth Bank is likely to have a view of how to compete and win in banking in the 1990s quite different from that of the TMT at Macquarie Bank or, indeed, St George. In part, of course, that reflects the fact that these organisations have very different histories. Since many members of the TMT acquire their experience within the firm, the belief system is itself very strongly conditioned by that history. We would expect then that successful firms will display a great deal of persistence or momentum in their behaviour. The TMT has learned a belief system which works well and hence is reinforced.

Figure 3.1 shows the relationship between individual schemas, the TMT belief system and the corporation's culture. This amoeba-like structure shows the TMT belief system almost like a nucleus of a cell with the schemas of others in the organisation being related to this belief system but not necessarily an integral part of it. The belief system lives within the body of the corporate culture. This is important for three reasons. First, the culture of the corporation filters information from the outside. The positive dimension of this is that such filtering removes extraneous information. The negative side is that it can also systematically remove important and relevant information. (The change in the style of line indicates this filtering.) Second, the belief system of the company is affected by, and affects, the culture of the company. Third, the culture of the company can alter actions by the TMT since these actions must be acted upon by the firm's employees and will, hence, be filtered by the culture and individual schemas. (Again, the change in the style of line indicates this filtering.)

Mapping belief systems

Over the last ten years, significant developments have occurred in research in cognitive mapping—both at the level of the individual schema and, less successfully, at the level of the firm. The most direct approach is, of course, to interview the key managers themselves. Yet a manager may be unwilling or unable to disclose her/his cognitive schema. Hence, other approaches have been adopted, in which the cognitive map or belief system is deduced or inferred by studying:

- the key resource allocation or other strategic decisions, particularly where these change following a change in membership of the TMT;[8] and
- internal and/or external documents of the firm (e.g. annual reports, letters

Figure 3.1: Schemas, TMT belief system and culture

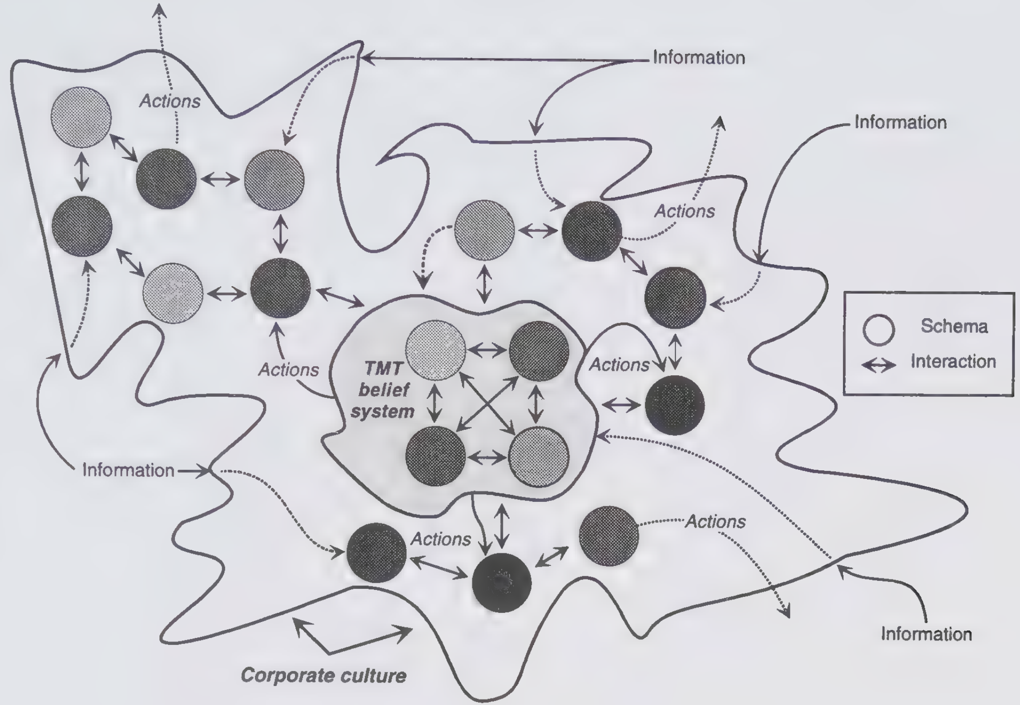

Information
Information
Actions
Actions
Actions
Actions
Actions
Actions
TMT belief system
Schema
Interaction
Information
Information
Corporate culture

Table 3.2: Shiseido's rules of engagement for the cosmetics industry

Satisfying a psychological need
Continuous product innovation
High quality packaging and design
Product differentiation
Full range of products critical to capturing a mass of customers
Product launches and promotions critical to distributors
Beauty consultants critical to success

Source: L. Chan et al, *Shiseido: East meets West*, unpublished paper, Australian Graduate School of Management, University of New South Wales, 1995.

to shareholders etc.) that help explain changes in performance linked both to external forces and to managerial action.

In our view, one of the most powerful ways to identify the belief system is simply by interview. Questions in the following form can be enormously powerful in addressing the beliefs about success and failure at the industry level:

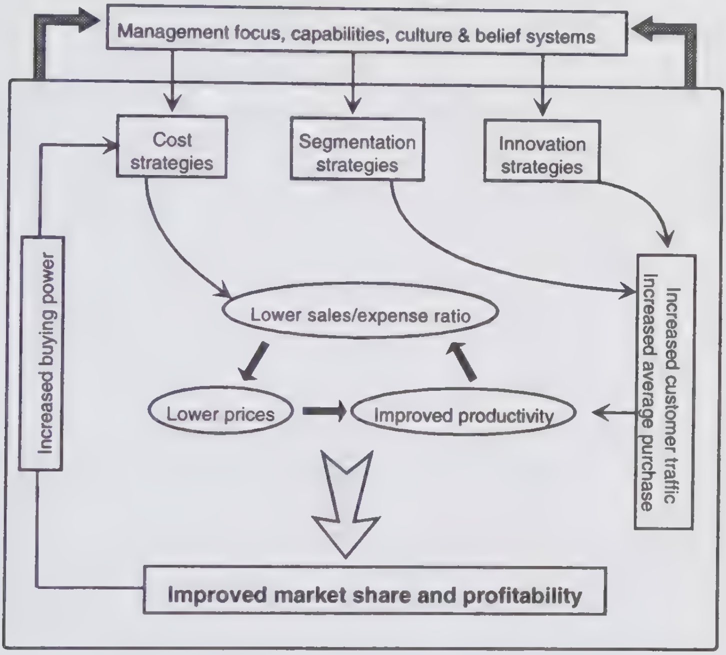
- What are the keys to being successful in this business and industry?
- Who are the most admirable and effective competitors?
- Is there a real difference in performance between this firm and its competitors? If so, what are the real reasons for that?

The answers to these questions typically lay out the belief system of the firm as to what is important within its industry. To use a military analogy, one characteristic of the belief system is the definition of rules of engagement for the industry. Table 3.2 lists some of the characteristics that the Japanese company Shiseido views as particularly relevant for competing in the cosmetics industry in Australia.

At the firm level, we can go through a similar exercise. Again three questions are critical:

- What are the keys to being successful in this business and industry? Note that this should follow from management's belief about competing in the industry.
- What are the processes that we bring to bear to be successful in this industry?
- How do our processes relate to the factors critical to success in the industry?

Figure 3.2: A cognitive map of Woolworths' understanding of success drivers in retailing


Management focus, capabilities, culture & belief systems
Cost strategies
Segmentation strategies
Innovation strategies
Increased buying power
Lower sales/expense ratio
Lower prices
Improved productivity
Increased customer traffic
Increased average purchase
Improved market share and profitability

Source: N. Chapman et al, *Coles Myer Ltd–Woolworths Ltd, Supermarket Divisions*, unpublished paper, Australian Graduate School of Management, University of New South Wales, 1995.

It is important to attempt to link the critical concepts and relationships (the third point above). The crucial element of such a causal map is the cause and effect relationships embedded within it. For example, figure 3.2 provides a very simple managerial schema for the Australian retailer Woolworths which we have simplified and structured. The key characteristic of this schema of the processes that drive success in the retail sector is the relationship between customer traffic and purchase quantity, the buying power of the retailer and the management of the internal cost system. Woolworths effects this system in two ways: (1) through its innovation and segmentation strategies aimed at drawing more customers and getting a greater share of their retail dollar and (2) through actions related to increasing the internal efficiency of its production (buying and selling) system. The information that is accumulated because of this system then feeds back to the management of the company reinforcing or questioning the belief system. What is most interesting about the logic of this system is the importance of innovation and segmentation. Most retail systems, for example Coles-Myer, are cost driven. Woolworths' approach is to use the ability of the marketing system to drive the cost system in the belief that the two are complementary and not in conflict.

Although the approaches vary, there are some key tools, most of which are based on the notion of causal reasoning. A simple example of this is the map for Perry Mendel, the founder of Kinder-Care Learning Centres, which is now the largest operator of private day care centres in the United States (see Case 3.2). The essential characteristics of his map, which is common to many others, is the view that the belief system can be thought of as a series of causal loops. Such loops are linked around strategic nodes—those points of particular importance to defining the strategy of the firm. Finally, changes to the belief system and strategy of the organisation can only be achieved successfully through the changing of the loops.[9]

Case 3.2 Cognitive maps and Kinder-Care

Cognitive mapping allows us to conceptualise organisations as dynamic systems of loops. As an example of such cognitive mapping, consider the case of Perry Mendel's Kinder-Care Learning Centres. Kinder-Care is the largest operator of private day care centres in the United States. In the late 1960s, Mendel perceived the need for innovative child care from newspaper reports of increasing numbers of working mothers and single-parent households. He wondered who would care for these children while their parents went to work. He also reasoned that many parents felt a great deal of guilt in providing only custodial child care for their children.

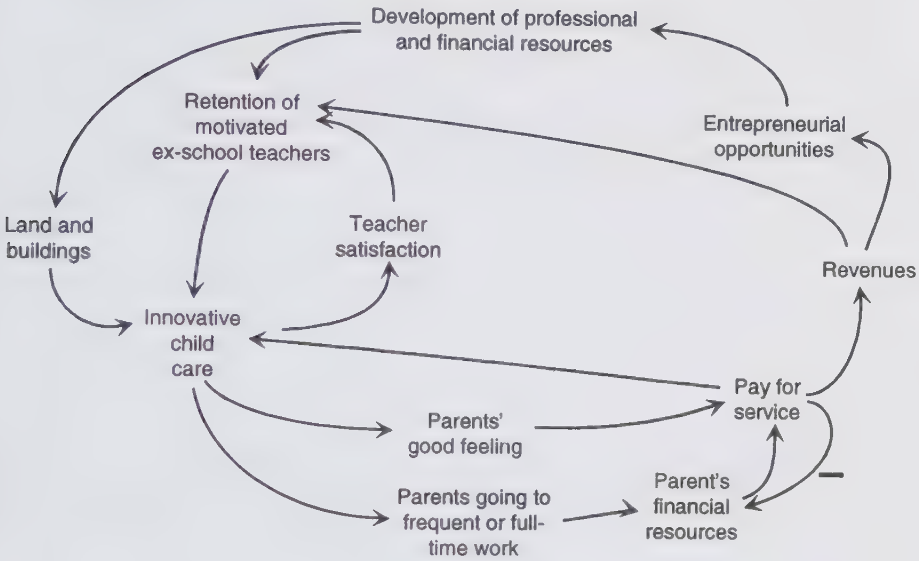
Mendel's solution was to establish centres where children would not only be cared for but would also be provided with a learning environment similar to pre-schools. In an early attempt to franchise the centres, Mendel found that the type of individual attracted to a franchise was typically an ex-school teacher. While having professional expertise, these individuals did not have the management and financial expertise required for running a franchise. If the learning centres were to be financially successful they would have to be held by Kinder-Care management.

Kinder-Care's strategy has created a set of interdependencies in which management, ex-school teachers, children and parents are actors in a system of loops. The following diagram shows the more important nodes, links and loops which, in Mendel's view, make up the system of loops organising Kinder-Care Learning Centres.

In this system, nodes link together to form loops. For example, a loop which contributes to the rapid growth of Kinder-Care is found at the left-centre of the diagram on the next page and is reproduced on page 48. This particular loop is *deviation-amplifying* and thus responsible for change. An initial small change in any one of the three nodes, say, an increase in innovative child care, either random or deliberate, loops back to that node as an additional increase which, in turn, leads to more increase. More innovative child care leads to more teacher satisfaction, which leads to more retention of motivated ex-school teachers, which leads to more innovative care. And so on.

Other loops in the day care system are *deviation-countering*. They are

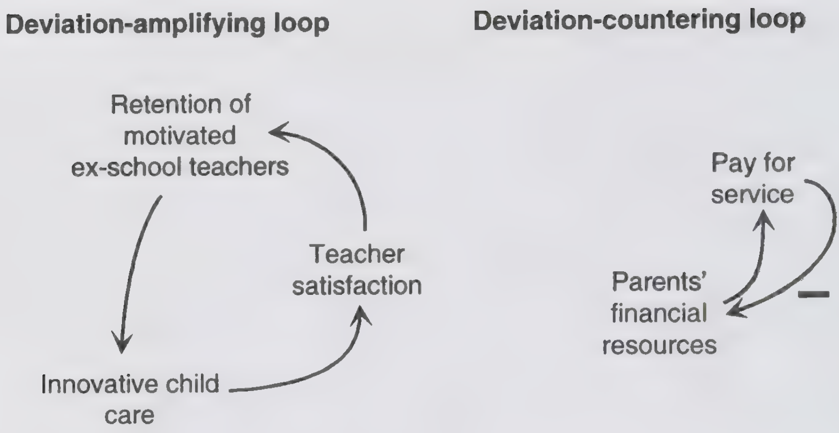
Mendel's cognitive map for Kinder-Care Learning Centres


Development of professional and financial resources
Retention of motivated ex-school teachers
Entrepreneurial opportunities
Land and buildings
Teacher satisfaction
Revenues
Innovative child care
Pay for service
Parents' good feeling
Parent's financial resources
−
Parents going to frequent or full-time work

responsible for dynamic stability and for preserving the day care's identity through its changes. One of these loops is shown on the right-hand side of the figure on the next page. Paying for the service reduces the parent's financial resources (hence the '–' indicator) which leads to less capacity to pay for further service. An initial small change in either of the two nodes, say, an increase in pay for service, loops back antagonistically to that node as a decrease in pay for service. If that decrease is not large enough to cancel the initial increase, it will leave a residual increase that, in turn, will loop back as an additional decrease. The presence of deviation-countering loops stabilises the growth of the system. However, when deviation-countering loops come to dominate a social system, change and growth attempts, whether random or deliberate, become self-defeating.

Deviation-amplifying and deviation-countering loops link together to form a dynamic system of loops. In the case of Kinder-Care Learning Centres, innovative child care is a particularly important node because it sustains several of the loops. It can be called a *strategic node*. In one of the system loops, a deviation-amplifying loop, innovative child care results in revenue, which invites entrepreneurial opportunities, which demands the development of professional management and financial resources, which results in both retaining motivated ex-school teachers and acquiring the land and buildings required for innovative child care. According to Perry Mendel, this loop contributes heavily to Kinder-Care's continuing growth and success. Thus he identifies it as a strategic loop within the Kinder-Care system of loops.

In viewing the organising activity of Kinder-Care Learning Centres as a cybernetic system of loops, we see that legal distinctions and physical structures do not define the activity. Most of the loops, and especially the main strategic loop, are deviation-amplifying, explaining the continuing growth of Kinder-Care Learning Centres—innovative child care induces pay for service which induces


Deviation-amplifying loop
Deviation-countering loop
Retention of motivated ex-school teachers
Teacher satisfaction
Innovative child care
Pay for service
Parents' financial resources
—

increased management and financial activity which induces an increase in the amount of innovative child care offered. We also see that, while changing, the system maintains dynamic stability through the deviation-countering effects of the negative loop involving parents' limited financial resources.

In Kinder-Care, it is the loops that create the organisation. If any of the critical loops in the system are cut open, the entire organising activity comes to a halt. Thus, organisations create loops, but more importantly, loops create organisations.

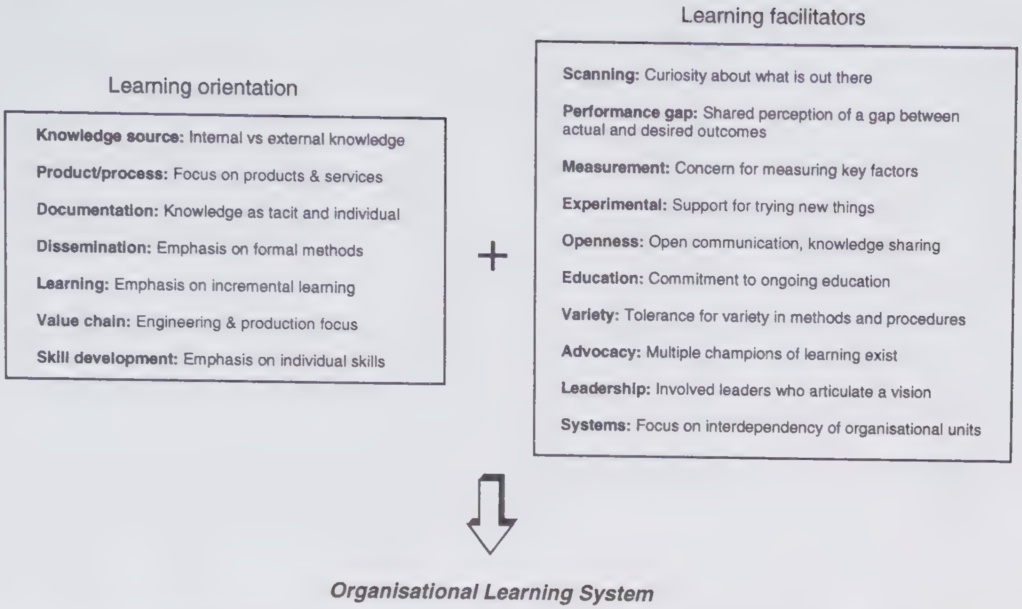
Source: M. Bougon and J. Komocar, 'Directing strategic change: a dynamic wholistic approach', in A. Huff (ed.), *Mapping Strategic Thought*, New York: John Wiley, 1990.

The key findings of this research, however, stand as warnings. First, managers act on mental representations of the world and those representations are likely to be of historical environments rather than of current ones. Second, the evidence is striking that most cognitive maps contain very few feedback loops. They suggest that most TMTs are not able to identify the second- and third-order effects of strategic action—particularly when there is a delay (and worse, a variable delay) between their actions and these effects.

The rigidity of belief systems

The use of schemas and belief systems helps managers cope with a world that often requires rapid response even in the face of uncertainty and ambiguity. As a consequence, the belief system will dominate other memories in terms of the accuracy and confidence with which a manager can recall it. But this advantage comes at a real price. Repeated use strengthens the commitment to the belief system. The more available the memory, the more inflexible and the less able is the manager to detect weak signals back from the marketplace that not all conforms to the model. So the belief system generates strong expectations and

Figure 3.3: The organisational learning system



Learning orientation

Knowledge source: Internal vs external knowledge

Product/process: Focus on products & services

Documentation: Knowledge as tacit and individual

Dissemination: Emphasis on formal methods

Learning: Emphasis on incremental learning

Value chain: Engineering & production focus

Skill development: Emphasis on individual skills

+

Learning facilitators

Scanning: Curiosity about what is out there

Performance gap: Shared perception of a gap between actual and desired outcomes

Measurement: Concern for measuring key factors

Experimental: Support for trying new things

Openness: Open communication, knowledge sharing

Education: Commitment to ongoing education

Variety: Tolerance for variety in methods and procedures

Advocacy: Multiple champions of learning exist

Leadership: Involved leaders who articulate a vision

Systems: Focus on interdependency of organisational units

Organisational Learning System

Source: Adapted from E. Nevis, ‘Organisations as learning systems’, in D. Ready (ed.), *In Charge of Change: Insights into Next-Generations Organisations,* Cambridge: ICEDR, 1995, 87–95.

resistance to change.

The core problem is that managers will often not receive feedback relevant to re-examining their beliefs. Feedback is effective if it is specific, credible and diagnostic. But in the real world we often observe that:

- outcomes are delayed and not easily attributable to any particular action;
- the environment is variable and there is noise that makes it hard to interpret the outcomes;
- there is typically no information about what the outcome could have been if another alternative had been chosen; and
- most important decisions are unique and provide little opportunity for learning.

Any claim that managerial experience creates good opportunities for learning about judgement must be supported by proof that the conditions for effective learning are really satisfied.

Nevis[10] sets out a simple model for developing an organisational learning system which we present in figure 3.3. To understand a *firm's organisational learning system* you must examine two interacting dimensions: the firm's *learning orientation* and the presence and absence of *learning facilitators*. The learning orientation, of which Nevis identifies seven types, describes the learning that is being acquired. The learning facilitators identify those factors that the firm possesses that propitiate learning. Whilst the learning orientation is descriptive—there is no normative judgement being made about which orientation is better or worse—a firm would clearly want to perform well on the learning facilitator dimension. The benefit of understanding your organisation's learning system is in understanding the natural barriers to change that come from corporate structures focused on specific types of information and learning.

We rarely act in ways that generate reliable, accurate and diagnostic feedback for us. Hence, belief systems are likely to be anchored historically and resistant to change unless a really severe deterioration in performance occurs. A critical reinforcement for belief systems is the tendency of people to ignore information that disconfirms beliefs and to believe in the consistency of their actions over time. For example, we tend to search for and notice information that is confirmatory of what we expect and believe. This is further exacerbated by the tendency to escalate commitment to a chosen course of action and to feel that actions have always been consistent with preconceived strategies.

Go back to our example of BHP's investment in Foster's and see what John Prescott says of the decision to purchase a 32 per cent stake in the company:

> What we have is a group of people working on finding a way to grow the business. And I think we have gone through one milestone, we have gone off a period of reconstruction, which we supported, and we have gone on to an expansionary phase, which we are supporting. *That was always the strategy. We have not changed our view.*[11]

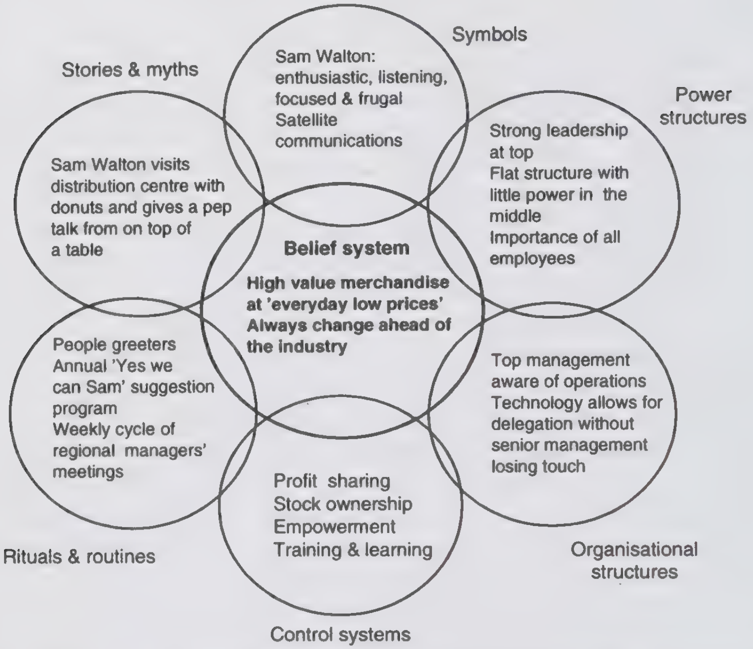
In reality, BHP's decision to increase its stake in Foster's represents a classic escalation of commitment; in this case, the spending of $2 billion on assets worth little more than $1.1 billion on the open market in an attempt to protect a previously sunk investment that itself arose under bizarre circumstances. Back in 1986, Elder's IXL (Foster's parent organisation at the time) became BHP's 'white knight' by rescuing it from a hostile takeover bid by Robert Holmes à Court through the indirect purchase of an 18 per cent stake in the steel and resources giant. The two companies then engaged in a cross-shareholding arrangement that cemented their collective fortunes. The collapse of John Elliot's (Elder's Chairman) empire precipitated BHP's subsequent actions. Therefore, BHP's position was not driven by any fundamental strategy but by a series of events that simply escalated out of control, forcing the company to commit more and more deeply to its initial investment.

Perhaps the single most important factor behind the rigidity of belief systems is the inability to treat business like a scientific experiment where cause and effect can be readily discerned and intervening factors can be controlled. Take, for example, the case of college admissions and the missing feedback problem.[12] One author was involved in evaluating the admission criteria at a large US university. One of the problems that a university faces is the fact that it sees the performance of the students it admits and who choose to attend that university, but it has no information about the students it rejects or the students it accepts who chose to attend another university. By getting future academic performance information[13] on a sample of all the students who applied to the university, it was possible to evaluate the admission criteria used to accept and reject students. The end result was surprising—the criteria used for admitting students had little, if anything, to do with their subsequent university performance! Ultimately the admission criteria were changed using more scientific principles. However, the fact that the criteria used were common to almost all American universities (the everyone-does-it fallacy) and the students who attended the university were 'satisfactory' (the satisficing fallacy) was enough to allow an erroneous system to run perpetually.

Recognising and evaluating corporate culture

The schemas of individual managers and employees and the formation of the TMT's belief system all develop and evolve within the culture of the corporation. They are critical in the development and evolution of that culture as well. This is obvious. However, one of the problems with corporate culture is the amorphousness of its definition. The strength of many Japanese corporations vis-a-vis their Western rivals is many times attributed to the nature of Japanese culture and the rather dominating cultures that these corporations attempt to create. However, at the end of the day it is impossible to determine whether these companies have been successful because, or in spite of, their corporate culture. And if we can anecdotally attribute some of their success to the nature

Figure 3.4: A culture web for Wal-Mart


Symbols
Sam Walton: enthusiastic, listening, focused & frugal
Satellite communications
Stories & myths
Sam Walton visits distribution centre with donuts and gives a pep talk from on top of a table
Power structures
Strong leadership at top
Flat structure with little power in the middle
Importance of all employees
Belief system
High value merchandise at 'everyday low prices'
Always change ahead of the industry
People greeters
Annual 'Yes we can Sam' suggestion program
Weekly cycle of regional managers' meetings
Top management aware of operations
Technology allows for delegation without senior management losing touch
Profit sharing
Stock ownership
Empowerment
Training & learning
Rituals & routines
Organisational structures
Control systems

Source: I. Beaver, L. Davis and M. Viney, *Wal-Mart Comes to Australia*, unpublished paper, Australian Graduate School of Management, University of New South Wales, 1995.

of their culture, how are we to determine which attributes of that culture are important? And even if we can do that, how are we to transfer this to other employees or other corporations?

Johnson[14] has come up with an interesting means of articulating a corporation's culture and relating it back to the belief system of the organisation. Johnson's approach, known as the *culture web*, is to subdivide culture into six categories, three of which are solid organisational categories and three of which are more anthropological. The organisational categories are:

- *the power structure*—the actual source(s) of power within the corporation;
- *the organisation structure*—the formal and informal hierarchical structure of the organisation;
- *the control systems*—the ways in which people are rewarded or punished for actions.

The anthropological categories attempt to capture the amorphous and subtle characteristics of the firm's culture. These categories are:

- *stories and myths*—the stories and myths about the organisation that

represent its history and development;
- *symbols*—the visual representation of the organisation, its structure, power centres and so on;
- *rituals and routines*—the way people behave to one another, the unwritten ways of doing business or regular activities that embody business and social processes.

At the centre of this culture is what Johnson calls 'the paradigm' but which is akin to our notion of a belief system. According to Johnson, this paradigm creates 'a relatively homogeneous approach to the interpretation of the complexity that the corporation faces' (p. 29).

Figure 3.4 presents a stylised culture web for the American company Wal Mart that says a lot about the nature of the company. Note the importance of Sam Walton as a symbol and at the heart of many of the stories and myths. What is also interesting is the relationship between the actual power structure and the organisation structure as well as the relationship between the rituals and routines and the control systems. Examining this structure we get a good picture of why this company has been successful—there is a clear linkage and symbiosis between the anthropological nature of the company's culture and the organisational side of its structure. The informal culture of Wal Mart is in sync with its formal structure.

A technique like the culture web is valuable not just for our understanding of corporate culture but for comparing companies that may be contemplating increasing their involvement with one another; for example, as with an alliance or merger. The number one reason for the failure of mergers and alliances is a conflict of culture. However, few companies articulate what they mean by this. Figure 3.5 shows the cultural conflicts that existed between Hoechst and Celanese when they merged in 1986. It is interesting that at the time this was viewed as a model marriage because Hoechst and Celanese were thought to be 'complementary'. According to Jay Meltzer, a chemical industry analyst, 'Hoechst gets an acknowledged strong marketing organisation. It is clear that [it] is buying management as well as the product'.[15] The reality was that the complementarity of the companies was reflective of distinctly different underlying cultures and belief systems. On the surface, the merger of a technology-driven and market-driven organisation was theoretically sound. Indeed, the fact that the two companies had been partners in several joint ventures and licensing agreements since the 1950s boded well for the companies' understanding of one another. In reality, these companies were committed to distinctly different values and they took years to work themselves into a viable integrated company.[16]

Changing beliefs and culture

Given that belief systems and culture are critical to the functioning of an organisation, successful transference of the beliefs and culture are necessary for

Figure 3.5: Cultural conflict in the Hoechst–Celanese merger

Hoechst	Celanese
Committed to job creation	Committed to reducing jobs
Centralised management	Decentralised management
Power at corporate HQ	Power at the divisional level
Technology driven	Market driven
Long-term business view	Short-term financial perspective
Research emphasis	Product development emphasis
Product-oriented quality: quality is a manufacturing issue	Quality is a cultural issue for the whole company

Source: L. Schein, *A Manager's Guide to Corporate Culture*, Washington DC: The Conference Board, 1990.

the continued evolution of the company. Although we have given considerable emphasis to the rigidity and biases of belief systems and culture, it should be noted that corporate cultures and beliefs are much more malleable than social beliefs and cultures. One only has to look at the dramatic changes wrought to the internal workings of GE, Xerox and IBM to see how quickly change can be orchestrated once it is recognised as necessary. But how does one change culture and beliefs other than through the normal processes of learning just discussed? We will focus on two areas: changing a culture and transferring knowledge and beliefs.

Changing culture

Culture can be viewed as a game and a set of rules. As noted in the case of the culture web we can think of this as being embodied in organisational and anthropological dimensions. It should, therefore, come as no surprise that changing culture requires: (1) understanding the rules of the game and (2) changing the game and its rules so that the players are rewarded by the new game and its new rules. It is also critical to recognise how much change is necessary. Do we need revolutionary change? Do we need change in the culture of a business unit? Do we need more cumulative and slow change? The magnitude of the change desired will have an impact on how persuasive the TMT must appear to be in driving the change, how innovative they must be, and how long the change will take to be implemented.

Referring back to the culture web, we have a tool that allows us to both understand and change culture. Having described and articulated the cultures and subcultures operating in the organisation, two simultaneous steps are required. First, the anthropological dimensions of culture—the rituals, symbols and myths—must be altered and/or reinterpreted to align them more effectively with the new cultural orientation. This can be achieved by retelling the stories with a new twist (i.e. 'reinterpreting history') or partially or completely creating a new set of myths, symbols and rituals. Where the luxury exists, employees ingrained in the old culture can be diluted through hiring additional staff or, when necessary, firings. Perhaps, one of the most important ways to affect cultural change is through the innovative leader. This person becomes, at once, both a symbol of the new culture and the source of its stories and myths. Case 3.3 discusses the wrenching changes that FAI, an Australian insurance company, went through in the late 1980s following the death of its founder. Critical to the cultural change was the changing of the dominating symbol of the founding leader. Second, the organisational dimensions of culture—the control systems, organisational structure and power sources—must be changed and aligned with the anthropological dimensions and the new cultural orientation. Control systems and organisational structure are more obvious areas where change can be achieved, at least on the surface, relatively easily. Dealing with internal power structures, like the anthropological dimensions of culture, requires bringing to bear considerable effort and may lead to the removal of personnel. Again, the FAI case is enlightening here. The cowboy risk-taking environment fostered by Larry Adler could only be changed by imposition of tight controls and the removal or attrition of those more supportive of the old culture.

The process of cultural change requires a host of leadership and implementation skills, as well as timing and luck. Trice and Beyer[17] describe a number of prescriptions for cultural change of which three are of particular importance to our discussion:

- the ability to capitalise on propitious moments;
- the ability to maintain continuity as well as change; and
- understanding resistance to cultural change.

The last of these is perhaps the most critical. At the individual level such resistance arises because of fear of the unknown, self-interest, dependence on the existing structure and a need for security and consistency. At the corporate level such resistance arises because of different perceptions about the goals, a lack of trust, threats to power bases and resource implications. The most effective way to deal with these problems is to use the first two points capably. Using events propitiously can re-focus the subcultures in the organisation around an unambiguous goal, for example, the survival of the company or the capturing of a make or break contract. Likewise, it can provide an opportunity to institute changes that would otherwise be blocked through thousands of small actions. Maintaining continuity allows resistance to be minimised since small incremental changes are less noticeable and threatening. Also, the changes can be orchestrated so as to affect smaller groups and thereby stop attempts at a consolidated resistance to the transformation of the corporate culture.

Case 3.3 Changing corporate culture at FAI

The FAI Group was established in 1971 by its founding Chairman and Chief Executive, Larry Adler. Adler was the driving force of the organisation in almost every respect. Although his style was to delegate operational responsibility to the branches and states the headquarters was controlled and integrated by him. His style was intensely personal and entrepreneurial.

In the middle 1980s, these personal qualities and attributes had a major positive impact on FAI's results. Between 1982 and 1988 premium income increased by a factor of 10, shareholders funds by a factor of eight and net operating profit leapt by a factor of 34. In the same period, the branch network grew rapidly, reaching 71 branches in 1988.

The continuous pressure of rapid growth and a lack of control and information systems created organisational tension. Some people saw favouritism emerging within the team; others were concerned about their lack of personal rewards for the enormous hard work they were putting in; some saw the lack of control systems leading to small rip-offs for personal gain; and others became concerned about the effects of exhaustion on decisions made by the very small group of men at the top.

Larry Adler had built a very small group of entrepreneurial people who shared his consuming interest in making money in a risky way. They shared his value systems. They believed in his instincts, knowledge, judgement and intuition, and in making decisions and taking quick action in the corporate jungle in which the action took place. This top group in FAI, in which his son Rodney had a leading role, had a considerable range of skills and formed a very small but formidable team—one dominated by its leader who took decisions with or without their advice and perhaps knowledge. They achieved considerable early success in some key investments and the results of these so dominated the profit performance of the group that it had a major impact on the business, its focus, the way it was run, its culture and its operations.

In 1987–1988, FAI faced two major challenges to its future success. The 1987 stock market crash eliminated the possibility of quick large-scale gains from entrepreneurial share market operations, even if such talent and intention were available to the company. Then in 1988, Larry Adler died suddenly after a short illness. The death of Adler deprived the company of its acknowledged leader who had been the central focus of its insurance business operations over time, but also the prime source of competence in the generation of its major investment income. This investment income had become so dominating in its impact on profit that it had, in fact, become the core business of FAI and the Chairman was its major and virtually sole source of competence.

The Board needed to make an immediate decision on who should become Chief Executive. The Board appointed Rodney Adler as the new Chief Executive and brought in John Landerer as Chairman. During the next few years, the Board, the Chief Executive and senior management of the company made a number of significant changes to the profile of the company, its policies and operations.

The Board rapidly found itself reporting deteriorating results which required major reassessments of the way the company operated. To deal with them and stop them recurring required new competencies, both personal and corporate, that the company did not generally possess, and major changes in the culture. Competitive pressure increased. The chickens from earlier decisions on the pricing of insurance and some risky large investments came home to roost at times that could not have been worse. The company's share price fell heavily.

Rodney Adler came into work on the afternoon of his father's funeral. His action symbolised his intention to achieve what could be achieved by application and hard work. It has remained a constant factor of his management style and approach in the years since. The policy of the group towards the management and growth of its main insurance underwriting operations remained fundamentally unaltered in the first year of its new Chief Executive. The marketing strategy of the insurance division was largely price driven, the main purpose being to increase market share.

As FAI's results continued to deteriorate, the Chief Executive had to step in to see that the premium rates were increased. So strong was the sales culture that some members of the sales team reacted to the new increased rates by increasing premiums as directed by the CEO, but reclassifying policies under different headings so they could continue to offer the same old low prices. It took some months for the top management to become aware of what was actually going on and a number of people had to be terminated before the increases in premium rates began to take place fully across the organisation.

The problem of decision making and enforcement in this area was made more difficult by the absence of good up-to-date management information on which decisions could be taken reliably by senior management and by strong conflict between the advice that came from the sales and accounting sides.

In the middle of 1990, Roy Ellis was appointed as Group General Manager Insurance, the first general manager appointment in the area since 1974, and became a Board member in 1991. Working with his Chief Executive and colleagues he set about leading and driving the changes he thought were needed to restore FAI's insurance business to long-term and lasting profitability.

One major need was to change the culture of the team from one which was sales driven to one which was profit driven. Another was to raise the professional skills of team members in handling insurance decisions, both at the selling level in the branch and at the centre. This required an explosion in skills and knowledge within FAI at both branch level and Head Office. Another was to maintain strong central control of rates and policy and yet maintain the autonomy and independence of branch and state management.

During the next two years, Ellis and his team set out to change and revitalise FAI's insurance operations. Actions were taken which transformed the staffing profile of the entire business; increased professionalism at every level; introduced widely varying control and motivation systems; and changed completely the management of information technology through a different approach to computer operations.

While the new General Manager was given full responsibility for executive action to revitalise the insurance business, Rodney Adler has maintained very close personal links with the managers. He travels regularly to meet and talk with the state managers and other executives and talks with all of them by telephone weekly. No decision involving more than $2 million for any purpose is made without reference to him and he meets weekly and often daily with his General

Manager. The Chief Executive finalises all salary and bonus changes and takes great interest in the personal circumstances and aspirations of his managers. Adler interviews all managers alone after budgets have been approved to give them directly his own expectations and emphasis on a personal basis.

One of the major problems facing Ellis on his arrival was the need to change the mindsets of many of the people in FAI about the way to achieve profitability. In particular, change was needed to the approach and philosophy of many of its managers that growth in sales, which in practice meant sales at keen or discounted prices, was the way to solve FAI's insurance profit problem. The sales culture at FAI was said to be characterised by 'too much drinking and not enough professionalism'. This culture was so ingrained that Ellis concluded that the only way to change the culture was to change the people.

Ellis personally spearheaded the plan of recruiting new managers and professional staff and in terminating many existing people. In a little over a year, 480 of FAI's staff were retrenched (out of a total of 1690), 12 out of 13 of its insurance group managers had been changed (nine of these recruited from outside) and over 50 of the top 60 posts in the insurance division had changed hands.

Ellis sought people with professional underwriting skills, which he thought were not sufficiently present in existing staff, and with those qualities he felt would maintain FAI's culture of individual effort, innovation and commitment. The commitment to professionalism would, he hoped, provide basic disciplines, focused on profit performance, while the personal qualities would maintain the 'FAI spirit'. He looked for people who were 'intelligent, articulate, visionary, egotistical, goal oriented, ambitious, young, who had a good track record and were willing to work hard'. In the managers he was looking for he placed great weight on a 'marketing flair combined with intelligence' whilst in people who would occupy central positions he 'focused strongly on professional skills'.

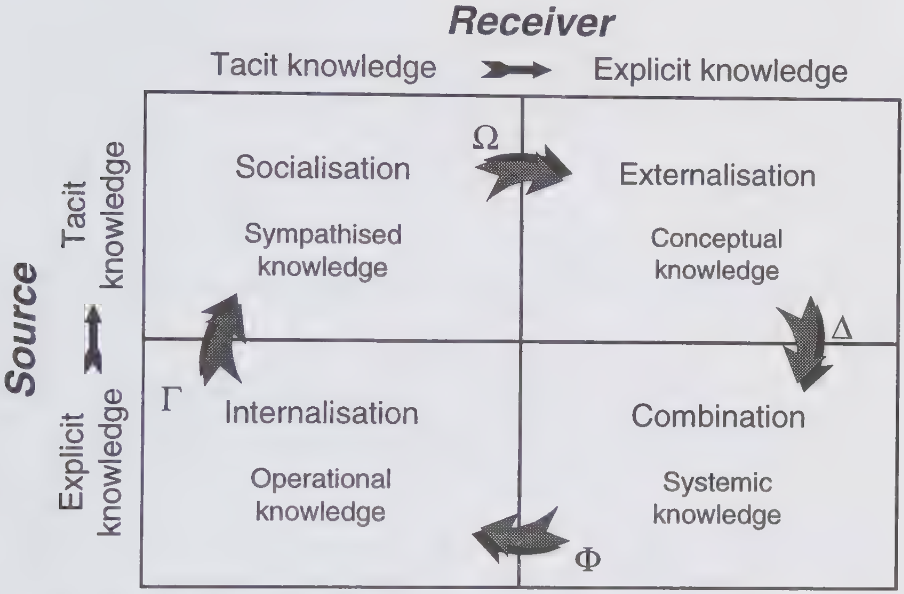
The changes that began to take place in the organisation did not arise from a major effort or interest to involve large numbers of managers or workers on a wide scale in the development of new strategies or ways of working. A relatively small top team collected the information they thought they needed and developed and ultimately sold their solutions to the organisation. As the strategies for the future were identified, meetings at manager level began to take place across the states. More information about performance began to be circulated. This began to develop more trust and interaction not only between the centre and the periphery but also between the territory based operations.

Source: Dennis Turner, *Ensuring the Future at FAI*, Centre for Corporate Change, Australian Graduate School of Management, University of New South Wales, 1993.

Transferring knowledge and beliefs

Knowledge and beliefs are not information, although they embody information and are embodied within information and beliefs. Therefore, transferring knowledge and beliefs is not akin to the simple transfer of information. The ultimate goal of transferring a knowledge and belief system to another person is

Figure 3.6: **The process of knowledge and belief transfer**


Receiver
Tacit knowledge
Explicit knowledge
Source
Tacit knowledge
Explicit knowledge
Socialisation
Sympathised knowledge
Externalisation
Conceptual knowledge
Internalisation
Operational knowledge
Combination
Systemic knowledge
Ω
Δ
Φ
Γ

Source: I. Nonaka and H. Takeuchi, *The Knowledge Creating Company*, New York: Oxford University Press, 1995.

the ability to take your internal qualitative knowledge and beliefs and internalise them into another individual. Nonaka and Takeuchi[18] provide a simple typology that we can use to get a grip on this difficult problem and see where the pitfalls lie.

Figure 3.6 outlines the knowledge and beliefs transfer process. The problem is to take your internal understanding and pass it on to another person. To do this four distinct stages must be passed through. First, you must be able to convert your internal understanding into something external—the process of *externalisation*. Second, you must be able to pass that external knowledge on to another person—the process of *combination*. Third, they must be able to combine that knowledge with their own knowledge—the process of *internalisation*. Fourth, they must be able to meld that knowledge into their own personal schemas—the process of *socialisation*. The successful transfer of knowledge and beliefs requires all four stages to be successful; therein lies the problem.

At each stage in this process, there will be errors. These errors may be misinterpretations, communication gaps, a failure to completely transfer ideas, and so on. If we denote these possible errors by the Greek symbols on the figure, we see that in just one attempt to transfer our beliefs we have missed by $\Omega + \Delta + \Phi + \Gamma$. Recognising that this process is ongoing, it becomes clear that after a few iterations, the knowledge and belief system can look nothing like what it did originally. Therefore, the management of a firm's knowledge and belief system is critically related to: (1) the management of the codification of that system and (2) the management of the transfer of that knowledge. Hence the heavy emphasis of major corporations on internal training of both technical and quantifiable knowledge and non-quantifiable 'personal development'. Together they ensure that the appropriate blueprint is received and bonded with the manager's existing schema (or the employee decides that they are just not for the company). At the same time, of course, this process can perpetuate erroneous knowledge and beliefs.

Summary—the importance of culture and belief systems

The members of a top management team usually develop a set of shared beliefs about ways to compete successfully in the firm's various businesses. These shared beliefs provide the team and its individual members with focus and a definition of the firm's *strategic intent*[19]—the essence of the firm's plan for winning. Management armed with such focus and intent will be able to interpret information in a common language and manner and quickly to agree on a plan of action. Of course, there is the danger that a belief system anchored in historical experience, with a natural bias towards internal approval, will cause the firm to become hopelessly mired within itself. The very complexity of cause and effect relationships in business means that the TMT will not necessarily learn about external changes until its strategy is severely outmoded. Some authors, most notably Hamel and Prahalad, view the idea of a historically embedded belief system as the bane of management. Successful firms are driven more by management's view of the future than its present or past.[20]

The belief systems of management operate within the culture of the corporation. Just as the belief system of top management filters information so that decisions can be made quickly, the culture of the corporation provides the social milieu of the firm. A company's culture:

- defines the way business is carried out;
- defines the nature of conduct with external publics;
- defines how internal publics interact;
- defines how individuals are developed;
- defines the roles and norms of performance; and
- defines the atmosphere of work.

Both belief systems and corporate culture are evolutionary tools. They allow organisations to cut through the fog of information and events so that decisions can be made as rationally as possible. As such, belief systems articulate the collective mind of the TMT, define the corporate culture, and establish the playing field and rules that operate within the firm.

Chapter 4

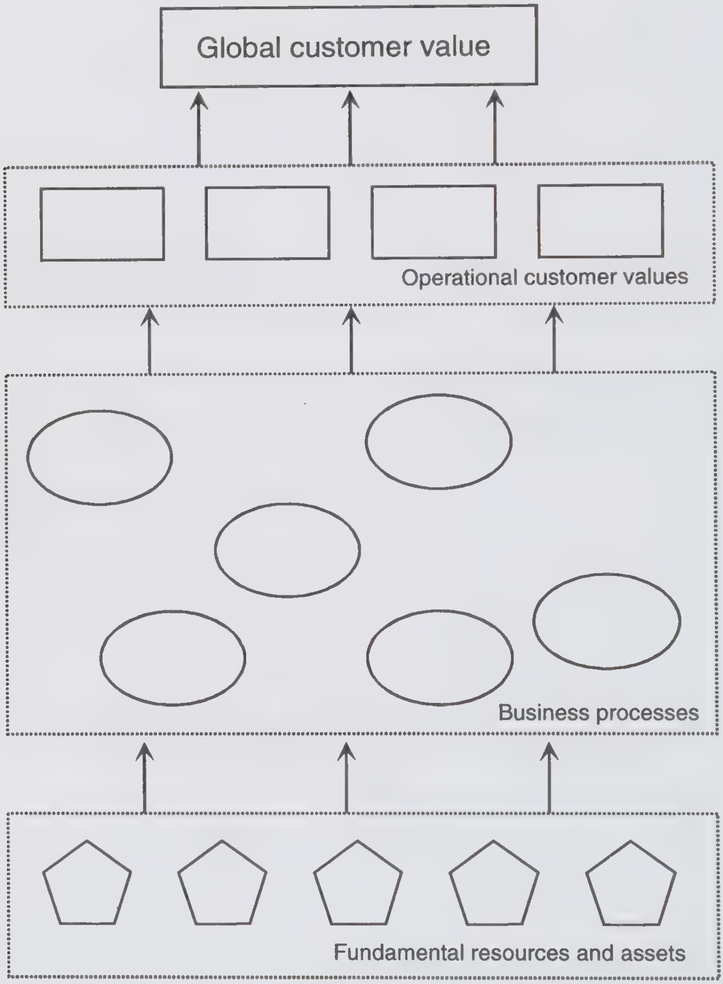
Corporate strategy in a nutshell

> *The functioning of the corporate system has not to date been adequately explained . . . The man of action may be content with a system that works. But one who reflects on the properties or characteristics of this system cannot help asking why it works and whether it will continue to work?*
>
> E. S. Mason, *The Corporation in Modern Society* (1960)

The first level of corporate strategic decision making is business unit strategy. The topics covered in this chapter are aimed at providing you with an overview of the tools and techniques to be used and the questions that need to be addressed in developing an integrated corporate strategy based on business unit strategies. The topics covered include:

- disassembly of the corporation's key decision nodes through the use of value chain analysis;
- understanding the sources and uses of competitive and comparative advantage;
- developing a framework for understanding vertical and horizontal integration;

Figure 4.1: **Matching customer value to resources through business processes**


Global customer value
Operational customer values
Business processes
Fundamental resources and assets

- examining the drivers behind corporate diversification and selecting the optimal portfolio of businesses.

A problem with dealing with strategy development is the interrelated nature of the key issues and concepts. For example, how can one talk about innovation without an understanding of the drivers of production cost or the issues associated with product diversification? Yet it is typical that we break our discussion into obvious categories that ignore this interaction between ideas and concepts so that key issues and techniques can be articulated clearly. To balance these competing claims, we outline briefly each subject as a means of introduction to the key points associated with business unit and corporate strategy. This will provide the reader with a basic background that can be built upon as we cover more specific topics throughout the book.

Matching customer value to resources through business processes

Although we mentioned in chapter 2 that we were not concerned about any one definition of strategy, we are concerned about how we might simply and conceptually think about the goal of strategy development. At one level, strategy is about the firm's positioning vis-a-vis its rivals. At another level, strategy is about the efficient conversion of resources into customer value. It is this latter goal of strategy that we will concentrate on.

Figure 4.1 presents the process of converting resources to customer value. The basic logic of this formulation is that customers do not really care about the processes that companies use to create the value they receive from products and services nor do they necessarily articulate their values in a manner that is easily converted into business processes.[1] One of the hallmarks of failed strategies is that companies tend to think of products and services in terms of what they do to make them and not what customers receive from them. For example, the engineers who make car doors are concerned about weight, sealing materials, welding points, the mechanism used to latch the door and maybe a hundred other technical specifications. The customer's value may be as simple as wanting the door to open and close easily and not to leak in the rain. The key to efficient strategy is to match what the company does (e.g., the engineering attributes of a door) with what the customer wants (e.g., a non-leaking door) recognising that components of value are determined by the customer and not the engineer or the company.

We can think about customer value in a number of ways. There might be vague 'global' customer values that are difficult to articulate, such as 'I want a satisfying breakfast' (e.g., in a consumer case) or 'I want a more efficient machine' (e.g., in an industrial case). These define the global value the customer is trying to achieve. At a more operational level, we can think of those values that are more measurable. For example, 'a satisfying breakfast' might be broken down into specific attributes such as having low calories, crunchiness, fruit content and so on. A 'more efficient machine' might encompass low machine down time, low servicing costs and machine productivity. Ideally, we can think of the global value as being some function of the operational values, perhaps a weighted sum, but this is unimportant at present. The company's business processes will then feed into the customer value in some manner. These business processes tell the management what activities are necessary to satisfy specific customer needs. For the moment we will leave this vaguely defined. The discussion in the next section, and Case 4.1 in particular, will develop this notion further.

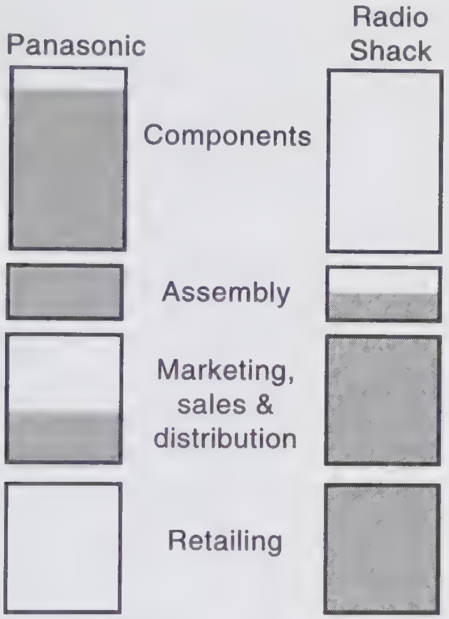
Many managers find this sort of thinking difficult to operationalise but the importance of understanding the key points is crucial since companies are doing this whether or not they can fully decompose the processes that are important and relate them to specific characteristics of the customer's valuation. Indeed, if one truly believes in the mantra of business process re-engineering, what we have been discussing is the BPR philosophy more clearly outlined. How can you satisfy customers if you don't know what they value? How can you achieve efficiency in operations if you don't understand your own business processes? Finally, how can you satisfy customers if you don't know what you need to do in terms of your business processes and how they relate to what customers need?

The value chain

The production of any good or provision of any service can be broken down into a number of different actions or sources of value. By breaking the provision of a good into its value components a manager is in a position to make clearer and more directed decisions. First, the value chain typology allows management to directly examine the sources of true value in the provision of its goods and services. Second, given this information, management can decide where to focus the company's activities. Third, since different firms start with different sources of comparative and competitive advantage, they compete through placing different levels of emphasis on the different sources of value. Understanding your competition in light of the value chain gives you a clear and simple typology for diagnosing your firm's relative strengths and weaknesses.

Take, for example, the following comparison between Panasonic and Radio Shack (see figure 4.2).[2] Radio Shack places no emphasis on components and very little emphasis on assembly (the shaded portion shows the percentage kept in-house). All its effort is in the downstream activities of marketing and retailing. Panasonic, on the other hand, puts no emphasis on retailing, some on distribution and most of its effort into components and assembly. These differences have direct implications for the way in which Panasonic and Radio Shack compete. Panasonic relies more heavily on setting up arrangements with middlemen and relies on advertising campaigns that are more general in character. Radio Shack relies on its ability to sell what it perceives each market wants. It then orders generic off-the-shelf products from a host of known suppliers. Its advertising,

Figure 4.2: Sources of value for Panasonic and Radio Shack



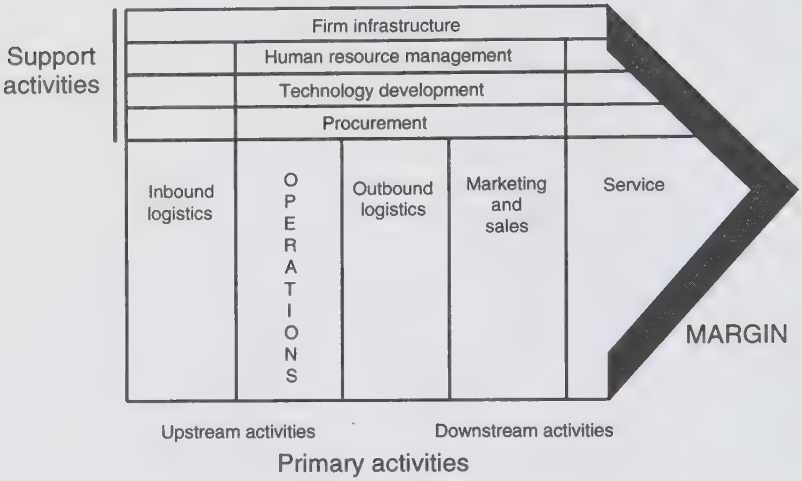
Source: H.W. Ebeling Jr and T. Doorley III, 'A strategic approach to acquisitions', *Journal of Business Strategy*, 3, Winter 1983, 44–54.

while coordinated centrally for copy purposes, is controlled by the local market managers.

Michael Porter's elaboration of the value chain is perhaps the most comprehensive.[3] He focuses on nine generic activities that are separated into two general categories—primary activities and support activities. The primary value activities are:

- *inbound logistics*—the acquisition and movement of materials into the production process
- *operations*—the production process
- *outbound logistics*—the movement of finished (or semi-finished) goods to the marketing function
- *marketing and sales*—the selling or retailing process
- *service*—the after-sales or with-sales provision of service.

Figure 4.3: Porter's generic value chain


Support activities
Firm infrastructure
Human resource management
Technology development
Procurement
Inbound logistics
OPERATIONS
Outbound logistics
Marketing and sales
Service
MARGIN
Upstream activities
Downstream activities
Primary activities

Source: M. Porter, 'The value chain and competitive advantage' in *Competitive Advantage*, New York: Free Press, 1985, 33–61.

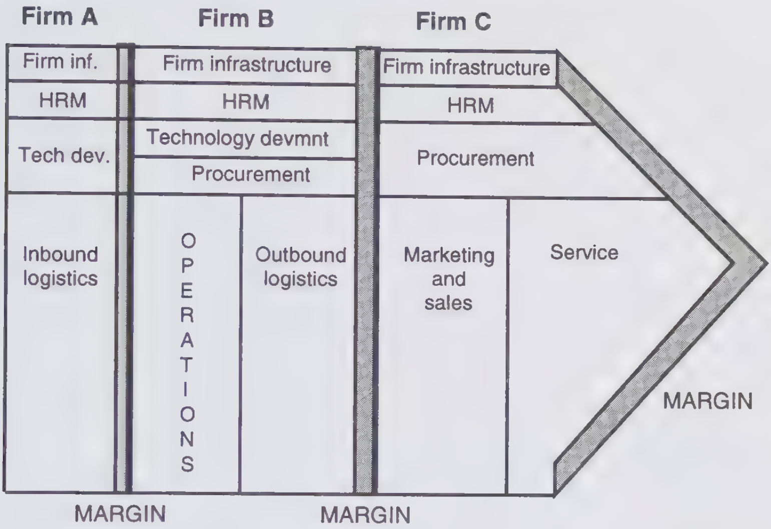
The support activities are:

- the *administrative* infrastructure—the traditional headquarters' functions of finance and decision making
- the *human resources* function—the personnel function
- *technology* and *product development*—research and development and product and process development
- *procurement*—the acquisition of materials, supplies and equipment for production, operations, distribution and marketing.

Two examples of Porter's version of the value chain are shown in figures 4.3 and 4.4. The first is representative of a vertically integrated company with the support activities spanning the primary functions.

The second example shows three separate companies none of which are truly vertically integrated. Firm A is a logistics company with no need for a procurement function (materials are ordered by Firm B). Firm B is a production company that makes and ships the product to the retailers. Firm C is the marketing and retailing company. It has no need for technology or product development support activities. Each is earning a margin on the activities in which it is engaging. The mining sector would be well represented by such a value chain. Company A could be the mining company providing the raw ore.

Figure 4.4: Porter's value chain with three companies


Firm A
Firm B
Firm C
Firm inf.
HRM
Tech dev.
Inbound logistics
Firm infrastructure
HRM
Technology devmnt
Procurement
OPERATIONS
Outbound logistics
Firm infrastructure
HRM
Procurement
Marketing and sales
Service
MARGIN
MARGIN
MARGIN

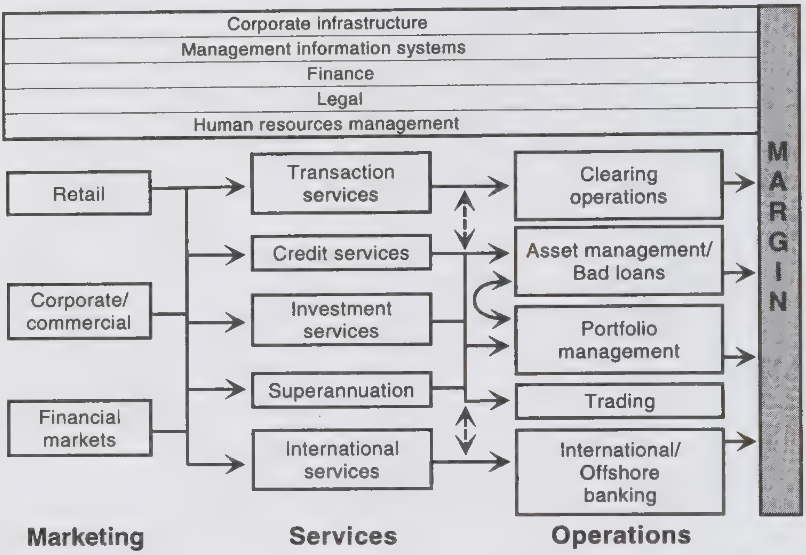
Source: M. Porter, 'The value chain and competitive advantage' in *Competitive Advantage*, New York: Free Press, 1985, 33–61.

Company B could be the refiner creating the raw product. Company C could be a spot market seller of finished but basic metal commodities.

Although Porter's version of the value chain is deliberately generic, each industry, and to some extent each company, can have unique and different value chains. Take, for example, the banking industry and Westpac in particular. The value chain shown in figure 4.5 is a representation of Westpac's basic value structure. Note several differences between it and the generic value chain. First, inbound and outbound logistics make little sense as value chain components for Westpac since service industries like banking have reduced physical movements of goods and materials. Second, the initial primary activity is marketing, in Westpac's case broken into three distinct marketing operations. Third, services break into distinct and different service types, each having some value to the three marketing divisions. Finally, the services are themselves made up of five distinct operations and are determined by their combination of operations. For example, superannuation services are made up of some combination of portfolio management, trading, asset management and clearing operations.

The importance of the value chain lies not in its somewhat simplistic categorisation of a firm's activities but in its focus on the sources of actual and potential value-based activities in the provision of a product or service. The

Figure 4.5: A value chain for a bank


Corporate infrastructure
Management information systems
Finance
Legal
Human resources management
Retail
Corporate/ commercial
Financial markets
Transaction services
Credit services
Investment services
Superannuation
International services
Clearing operations
Asset management/ Bad loans
Portfolio management
Trading
International/ Offshore banking
MARGIN
Marketing
Services
Operations

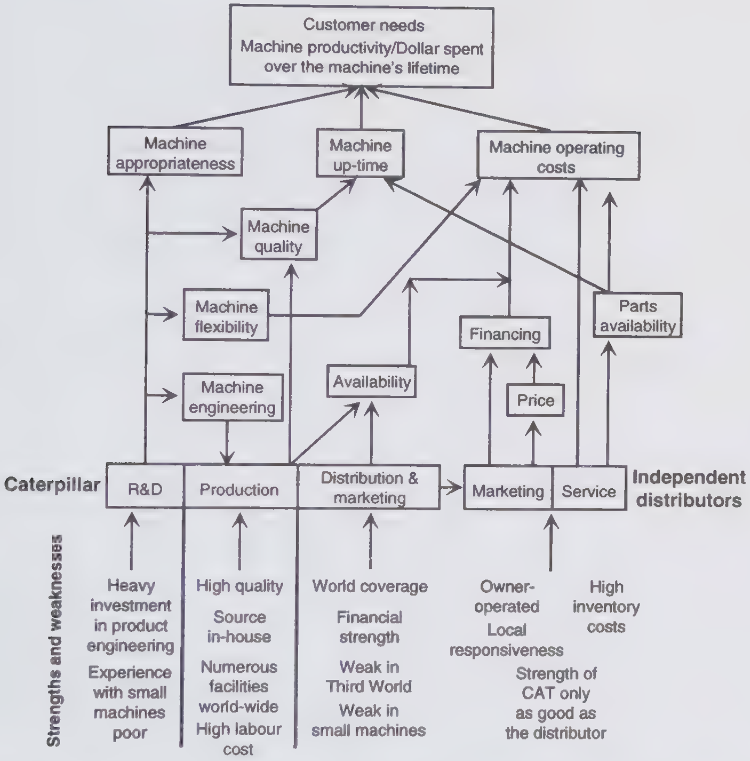
understanding of where and why value is created at each stage in the product or service process allows a company to link value-based strategies to customer needs and sources of advantage. Competitive and comparative advantages can be pinpointed to specific value activities or to combinations of those activities. This is demonstrated in the example of Caterpillar in Case 4.1.

Case 4.1 Caterpillar Tractor—using the value chain

Caterpillar is the largest producer of heavy construction equipment in the world. However, unlike its major competitor, Komatsu, Caterpillar chose to operate primarily as a product development and production company and not a retailer and service provider. Caterpillar develops and produces equipment but leaves the sales and service to a small number of country and local distributors. These are not, however, small operations. The average Caterpillar distributor does more than $200 million a year in business.

The diagram on the following page shows how the value chain can be used to understand the sources of competitive advantage and determinants of customer satisfaction. Just as you learned in the case of John Deere, heavy construction equipment users are concerned about the profitability derived from using a specific piece of equipment. The determinants of machine productivity are further broken down into three components: the appropriateness of the machine for the job, the amount of time the machine is available for use, and the operating costs

A value chain for Caterpillar tractor


Customer needs
Machine productivity/Dollar spent over the machine's lifetime
Machine appropriateness
Machine up-time
Machine operating costs
Machine quality
Machine flexibility
Parts availability
Financing
Availability
Price
Machine engineering
Caterpillar
R&D
Production
Distribution & marketing
Marketing
Service
Independent distributors
Strengths and weaknesses
Heavy investment in product engineering
Experience with small machines poor
High quality
Source in-house
Numerous facilities world-wide
High labour cost
World coverage
Financial strength
Weak in Third World
Weak in small machines
Owner-operated
Local responsiveness
High inventory costs
Strength of CAT only as good as the distributor

of the machine. These three factors are then related to things Caterpillar and its distributors can affect, e.g., machine quality, price and product availability, and the sources of value that are used to affect them. Caterpillar can affect machine quality, machine flexibility and machine appropriateness through its R&D activities. Machine quality is affected not only by R&D but by production, and these two areas help determine machine up-time. Alternatively, although machine flexibility can affect machine operating costs we see that this is influenced much more heavily by the actions of the local distributors.

Now the question is what determines Caterpillar's competitive advantages at each stage in the value chain. In the case of R&D we see that Caterpillar has heavy investment in product engineering. However, it has very little experience in the small machine market (a fact noted in Case 2.2). In the case of production, Caterpillar has high labour costs but flexibility and transport cost advantages generated by its numerous facilities world-wide. Its distributors give it local responsiveness, however, it is heavily dependent in the sense that Caterpillar's reputation is linked one-for-one with its customers' perceptions of its distributors' quality.

Operationally, the value-business process breakdown tells us a lot about what we need to do to satisfy customer value. Suppose that we find that customers value machine up-time very heavily (say 60 per cent of their value comes from this). What does this imply strategically? Caterpillar can affect machine up-time either by more effectively engineering and producing the product or by putting pressure on distributors to hold more parts inventory. It is clear that this will lead to a natural conflict since R&D and production require large costs for Caterpillar while inventory costs are a major concern of the distributors. The distributors could correctly argue, and Caterpillar should probably listen to them, that by better engineering the machine not only do they have an impact on the 60 per cent of customer value driven by machine up-time but they also have an impact on the remaining 40 per cent of value represented by machine appropriateness and machine operating costs.

This example is based on a case written by Professor Stephen Allen of Babson College.

Sources of competitive advantage

Firms are continually faced with the Darwinian prospect of competition and fight, generally futilely, to stave off the inevitable erosion of their market position and commoditisation of their markets. In a constantly changing world, there are few sources of truly sustainable advantage. If, for example, we examine the world's most popular brands (see Table 4.1), we find that the most recognised brands are also some of the oldest in their market, for example, Coca-Cola and Kodak in the United States and Mercedes-Benz and Philips in Europe.

However, upstarts do exist, particularly in markets with pressures towards immediate and radical change, for example, Sony in consumer electronics and Toyota in automobiles. In addition, as the demographic environment of the marketplace changes, many firms find that hard-won advantages slowly erode. For example, in the US soft drink market Pepsi is preferred by young people while Coke is preferred by those over 45. This fact does not bode well for Coca-Cola in the US.[4] In Europe, McDonald's, Levi's and Benetton are all on the under-30s recognisable brands list while Philips, Porsche and Nivea are not.

Firms typically lose their advantage in the economic contest in one or more of three ways: through self-inflicted wounds, through competitor actions (e.g., the Toys'R'Us entry into Australia), or because of market evolution (e.g., the development of cellular communication and the entry of Optus). Building up a sustainable advantage is more than just avoiding self-inflicted wounds but also recognising one's position vis-a-vis the competition and the changes in the market environment.

Table 4.1: The world's most recognisable brands

Rank	Europe	United States	Japan	World
1	Coca-Cola	Coca-Cola	Sony	Coca-Cola
2	Sony	Campbell's	National	Sony
3	Mercedes	Disney	Mercedes	Mercedes
4	BMW	Pepsi	Toyota	Kodak
5	Philips	Kodak	Takashimaya	Disney
6	Volkswagen	NBC	Rolls Royce	Nestlé
7	Adidas	Black & Decker	Seiko	Toyota
8	Kodak	Kellogg's	Matsushita	McDonald's
9	Nivea	McDonald's	Hitachi	IBM
10	Porsche	Hershey's	Suntory	Pepsi

Source: Landor and Associates.

As noted in chapter 2, strategists like to think in terms of competitive and comparative advantages. For the sake of explication, let us repeat our definitions of these types of advantages.

- *Comparative advantages* are location- or situation-specific advantages that competitors can replicate at reasonable cost by relocating or altering the situational circumstances.
- *Competitive advantages* are firm-specific advantages that cannot be imitated by other firms or can only be mimicked at very high cost.

Two things are important about these advantages. First, they are defined relative to the firm's competition. Second, they are not necessarily separable, that is, functionally, comparative and competitive advantage are not independent. Therefore, the total advantage that a firm has relative to its rivals is not simply the sum of its comparative and competitive advantages. It is also important to recognise that firms can have competitive and comparative disadvantages. For example, Australia's inflexible labour system is a comparative disadvantage for many firms since they cannot choose to locate outside the country.[5] On the other hand, Australia's apparent weakness in new product innovation is a competitive disadvantage. Australian companies can only remedy this weakness through complex and expensive restructuring of their total operations.

Figure 4.6 shows how the roles of comparative and competitive advantage impact on the strategy of a company. In a world of no competitive or comparative advantage (cell I), the firm is stuck in the price-driven world of pure economic competition, selling commodity-like goods in direct competition with many similarly structured firms. With comparative advantages but no competitive advantage (cell II), the firm is in a world of temporary advantages. There are three generic strategies for competing away comparative advantages: engage in inter-industry trade (e.g., outsourcing IT services), move (or alter) operations, and vertically integrate. In a world with competitive advantages but no comparative advantages (cell III), the firm has the incentive to spread these advantages across products either through intra-industry trade (e.g., selling the advantage to other firms in the same or related industries) or through horizontal integration (diversification across related product lines). In the complex world of comparative and competitive advantage, firms pursue mixed strategies based on their combinations of advantages. Cell IV is by far the most interesting since it implies that firms will have very different mixtures of assets while competing against one another in the same general market.

We are most concerned about the sources of sustainable competitive advantage, that is, those competitive advantages that the firm and its management can strengthen and extend into the future and across product categories. There are three sources of sustainable competitive advantage—time and innovation, capacity and cost position, and segmentation. Each will be covered below.

Competitive advantage—time and innovation

From a historical perspective, the most radical changes in industry structure have come about from innovation, either new products and services or new processes for making products and providing services. On a day-to-day basis, most managers are caught up in the direct rivalry between themselves and their direct competitors. However, the long-run success and failure of firms has been driven by their ability to get new products and services to market and to do so quickly. These are two sides of the coin of corporate sustainability—innovation and time-based competition.

Innovation is a new or different solution to a new or existing problem.[6] The problem may have to do with the production process and the innovation may

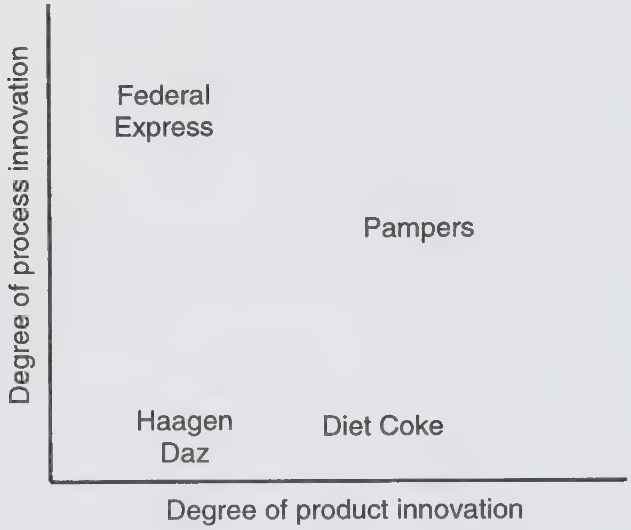
Figure 4.6: Competitive and comparative advantage and generic strategies

		Comparative advantage of firms	
		No advantage	Advantaged
Competitive advantage of firms	No advantage	Pure competition Commodity-like markets I	Inter-industry trade Move/alter operations Vertical integration II
	Advantaged	Intra-industry trade Horizontal integration III	Vertical and horizontal Integration Firms pursuing alternative sourcing and market strategies IV

represent a *process* improvement which leads to greater efficiency and lower cost. Alternatively, the problem may be related to the needs of a customer and the innovation would represent a *product* or *service innovation.* Product and process innovation are not dichotomous in that process improvements are often driven by new product demands while new products frequently arise out of developments in process engineering (see Case 4.2). For example, Japanese companies are quite good at setting production process goals based on the price and product configuration they believe the market demands. Techniques like quality function deployment (QFD) directly link engineering features to product features forcing the engineers to think only about features customers truly value.

Figure 4.7 highlights the interrelationship between product and process innovation. Diet Coke and Haagen Daz Ice Cream are classic examples of primary product innovations. They represent old technologies and simple reconfigurations of inputs. Diet Coke added the artificial sweetener aspartame to a basic formula (note that G. D. Searle's development of aspartame was the real innovation) while Haagen Daz's innovation was simply to increase the quality of the inputs and uniqueness of the flavours found in ice cream. Pampers, on the other hand, is a classic mix of process and product innovation. Disposable nappies are a relatively recent phenomenon, first marketed in Sweden in the

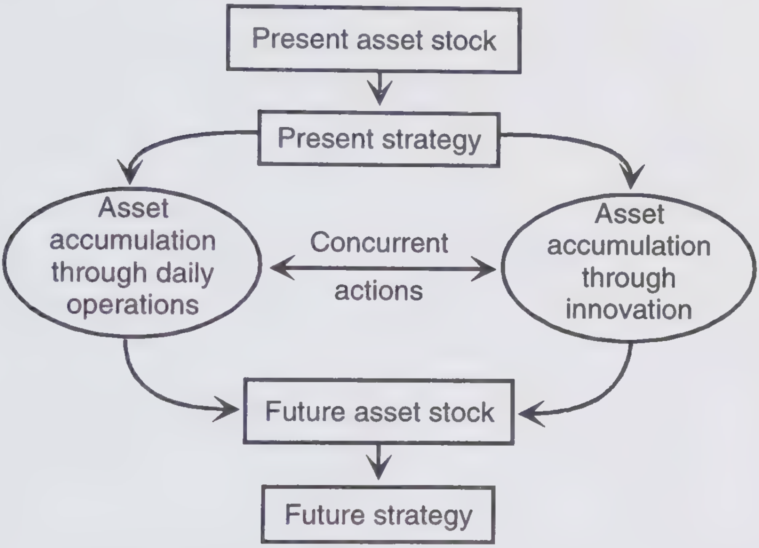
Figure 4.7: Product and process innovation



1950s. Procter & Gamble's innovation was the ability to mass-produce one-piece nappies, an innovation that was driven primarily by P&G's ability to master the production technology and make it commercially feasible. The importance and uniqueness of this innovation is seen in the fact that Kimberly-Clark, P&G's main nappy rival, did not structure its strategy on bettering P&G on the production front. Instead, Kimberly-Clark has focused exclusively on product feature competition. The most extreme example of process-driven innovation is the case of Federal Express. Federal Express took a simple idea and engineered it into a market through the use of computer technology and a hub-and-spoke airline delivery system. From the pure product perspective, Federal Express did nothing new. However, it excelled at engineering a product system that provided unique perceived value to its customers. Today it offers not only overnight delivery services but has expanded into the business of inventory and distribution management. This is a classic example of the role of fundamental resources as a source of competitive advantage.

What is the competitive advantage from innovation? The strategic advantage from innovation comes not from the investment in R&D (if that were the case all a firm would have to do is spend money to get the returns from innovation), but from what is embodied in the innovation process. To understand this we need to recognise that innovation is an output that arises from the underlying assets

Figure 4.8: The asset accumulation process


Present asset stock
Present strategy
Asset accumulation through daily operations
Concurrent actions
Asset accumulation through innovation
Future asset stock
Future strategy

available to the firm. The better the structure of these assets, the greater the amount and speed of innovation emanating from the company. This idea is profound since it views innovation, not as simply generating new products and processes but as a renewal driver, as a source of resource creation and enhancement.

If you remember from chapter 2, we spoke of the firm as requiring information as an input to the process of creating value and producing (and receiving) information as one of the outputs of that process. We can extend this idea by recognising that the firm is continually engaged in a process of asset accumulation (see figure 4.8). Remember also that assets include not only things like property, plant and equipment but also intangibles like brand names and technical know-how. Assets can be accumulated through external purchase and through internal operations. Internal asset accumulation occurs in two major ways, through daily operations and through innovation. There is an essential simultaneity to this internal process. Operationally-accumulated assets allow for greater innovation-accumulated assets, and vice versa, and the characteristics of this asset base affect, and are affected by, the firm's current and future strategies. In other words, innovation arises not only from investment in research and development and product development but from investments in

Table 4.2: Market share effects of order of entry

	Share relative to first entrant	Market share by order of entry (percent)				
		First	Second	Third	Fourth	Fifth
First	1.00	100.00				
Second	0.71	58.50	41.50			
Third	0.58	43.60	31.00	24.50		
Fourth	0.51	35.70	25.40	20.80	18.10	
Fifth	0.45	30.80	21.90	17.90	15.50	13.90

Note: Read across table

Source: G. Urban, T. Carter, S. Gaskin and Z. Mucha, 'Market share rewards to pioneering brands: an empirical analysis and strategic implications', *Management Science*, 32, June 1986, 645–659. The study represents an analysis of 129 brands in 34 consumer product categories.

production, marketing and distribution.

What are the strategic gains from innovation? It goes without saying that companies innovate to make money and survive. Little more needs to be said about this point except that the survival motive is considerably stronger than the profit motive. However, there are other tangible and intangible gains from innovation which we can put into two broad categories. Firstly, innovation puts a firm in a position to define a market and reap what are known as first-mover advantages. Secondly, innovation is a learning process that provides the firm with a unique advantage when it comes to later innovation.

First-mover advantages are thought to arise because of the natural barriers that distinguish early innovators, known also as pioneers, from the followers. The notion of a first-mover advantage was developed based on data from the PIMS project and related research.[7] An example of some of the later results of this research are shown in table 4.2.[8] The results are rather transparent—later entrants do not achieve the level of market share found for earlier entrants. More specifically it appears that the order of entry is important.

The results of this analysis clearly indicate that being first matters. However, the question that is not addressed with enough care is who *was* first? The PIMS

Table 4.3: Product and market pioneers and current market leaders

Category	Product pioneer	Market pioneer	Current leader
Video recorders	Ampex (1956)	Ampex (1956)	RCA (1977)
Microwave ovens	Raytheon (1946)	Amana (1966)	GE/Samsung (1979)
Dishwasher	Crescent (1900)	Crescent (1900)	GE (1935)
Fax machines	Xerox (1964)	Xerox (1964)	Sharp (1982)
Flashlight battery	Bright Star (1909)	Bright Star (1909)	Everready (1920)
Colour TV	Bell Labs (1929)	RCA (1954)	RCA/Thomson (1954)
Laundry detergent	Reychler (1913)	Dreft (1933)	Tide (1946)
Light beer	Trommer's (1961)	Trommer's (1961)	Miller Lite (1975)
Diet cola	Kirsch's (1952)	Kirsch's (1952)	Diet Coke (1982)
Safety razor	Star (1876)	Star (1876)	Gillette (1903)

Source: P. Golder and G. Tellis, *Do Pioneers Really Have Long-Term Advantages? A Historical Analysis*, Marketing Science Institute, Report 92–124, 1992.

results are based solely on self-reports by large companies operating in the United States. In more recent and comprehensive work, Golder and Tellis[9] show that being first is less important than holding, or capturing, the position of leader during the period of early market growth. Your best chances of success are in being what is known as an early market leader. Pioneers fail in almost 47 per cent of all cases, while early market leaders fail only 8 per cent of the time. In other words, you do not want to be the first soldier leading the charge but you want to be there sufficiently early to take part in the glory. Table 4.3 shows some examples of failed products and market pioneers.

This evidence points to some of the characteristics that make being a first-mover both a blessing and a curse. First and critically, being a pioneer allows the firm to define the market based upon its product's characteristics. Carpenter and Nakamoto[10] found that consumers who were exposed to a fictitious new product category consistently preferred the product to which they were first exposed even when other alternatives were available. Psychologically, consumers are sticky (or rigid) in their product preferences and pioneers can take advantage of this rigidity. Pioneers that lose their advantage typically do so because of their inability to define the market around their product. This is due to either their inability to bring the innovation to market, as in the case of Ampex, or the ability of a competitor to put itself at the nexus of the market, as in the case of Tide's dominance of the American detergent market after World War II through the use of television advertising. Secondly, being first allows the company to gain valuable experience. Should this experience become common knowledge in the marketplace, later entrants are granted an advantage: the ability to exploit this knowledge without paying the investment cost (the knowledge becomes a public good). Coca-Cola and Miller Brewing Company were both late entrants into the diet drink sections of their respective markets, soft drinks and beer. Both used the knowledge and experience of less powerful rivals to test the marketplace. When they felt the circumstances were right, they used their production, marketing and distribution clout to lead their drive to market dominance.

Being able to innovate is not the only key to competitive advantage. Speed to market appears to be a complementary skill to innovation. This is the realm of what has come to be known as *time-based competition (TBC)*.

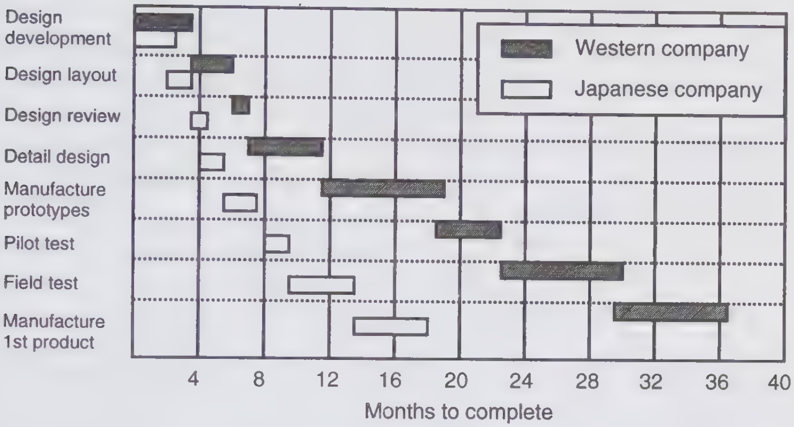
TBC is confusingly referred to in two ways. Some writers use it to mean the ability to achieve speed of response as in the case of delivery time. Other writers use it to refer to the compression of time both within and between the stages of the production of a good or service. For our purposes here TBC is defined in the latter way, recognising that both viewpoints are based on the same fundamental logic—products or processes should be adding value to the product, service or process at every stage in its development. It is the compression of the necessary time to move intermediate goods between the stages of the value chain and within stages of the value chain. With respect to innovation it is the time compression of the stages necessary to move a new product from idea to commercialisation.

Time compression in innovation has tremendous value since it implies that the time-based competitor is able to create more generations of a new product in any given time period. TBC is also a competitive advantage since it appears to be difficult to achieve and is unrelated to specific locations and material usage. TBC arises from the addressing of three questions:

- Does the activity add value? Or does it just add time and cost?
- Is the activity redundant? Does it duplicate information generated at another stage?
- Can the activity be done in parallel with other activities?

Figure 4.9 shows a comparison of the innovation processes of Japanese and Western marine gear companies in 1987.[11] The Western company takes approximately twice the time to generate a new product than does the Japanese

Figure 4.9: TBC and innovation in marine gears



Time to market and product generation

Time to market	Western company	Japanese company
19 months		1st generation
38 months	1st generation	2nd generation
57 months		3rd generation
76 months	2nd generation	4th generation
97 months		5th generation

Source: G. Stalk and T. Hout, *Competing Against Time,* New York: Free Press, 1990.

company. The reasons behind this are threefold. First, the Japanese company appears to spend less time on each activity. Second, the Japanese company takes advantage of more parallel activity in the early stages of the new product cycle. Finally, the Japanese company loads a greater percentage of its activity at the front-end of the innovation process. Careful design at the beginning of the innovation process leads to less re-engineering later on. This highlights the advantages of faster product development time since, using this example, we can easily extrapolate from this to the future generations of products. By the time the Western company has brought its second generation product to market, the Japanese company is on its fourth generation and moving to its fifth generation.

Innovation itself is not a competitive advantage but arises from managerial and organisational processes that are competitive advantages. The ability to manage the innovation process quickly assures a firm that it will have sustainable first-mover advantages since it knows that it can create successive generations of products before its rivals. The ability to create new products and get them to market assures contact with suppliers, distributors and customers in a self-feeding system of bilateral information flow. In addition, the processes that allow a firm to be a continuous innovator use the same skills and assets that ensure that the firm will be cost competitive as well.

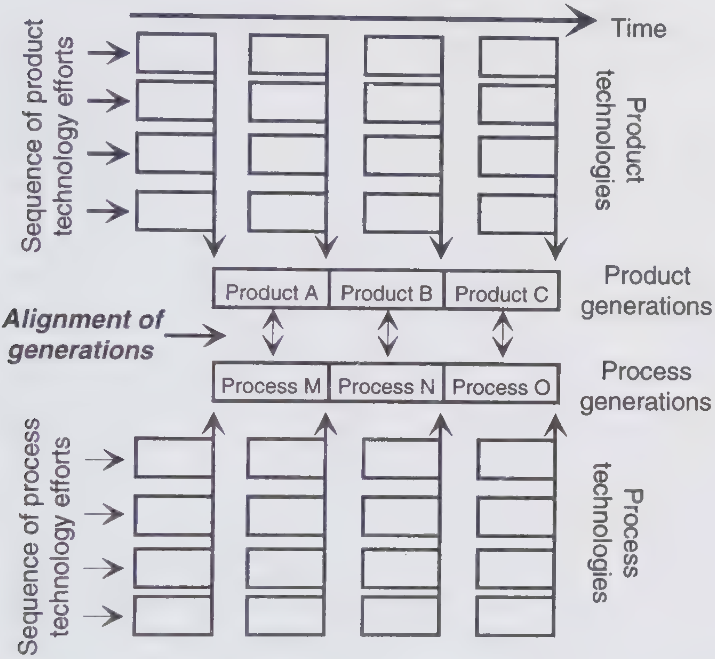
Case 4.2 Process and product innovation

All companies, but technology companies in particular, are concerned with the balancing of process and product innovations so that the correct generations of process technology are used with the right products. This is not only an issue of efficiency but one of cost as well. It is important that investments in process technology and product development are linked so that process improvements that cannot be easily integrated with current production are not erroneously developed. For example, suppose a company has developed a product to use a specific production technology and has invested $100 million in the production facility. The facility is not easily altered and has a life of 10 years. Within a year, the R&D department develops a better technology that costs $75 million to install. The company has clearly mis-allocated the timing of its two innovation processes. One must question why the R&D department has focused so much effort on a technology that would immediately replace its newest technology and why the production facilities were built when a better technology was coming along in such a short period of time. A more efficient allocation of research effort would have been to put more emphasis on speeding up the process of R&D to more closely match the product development cycle.

In reality, many things will cause a mismatching of process and product development—competition, profitability, market opportunities, lack of knowledge, communications failure and so on. However, it is important for companies to recognise that the two types of development programs are not independent. IBM, for example, works quite diligently at attempting to match generations of product with the right process technology. The schematic on the next page outlines the IBM process for matching process and product development by sequencing generations of process development to match generations of product development.

Source: Adapted From K. Clark and S. Wheelright, *Managing New Product and Process Development,* Cambridge MA: Harvard University Press, 1993.

Product and process technology sequencing


Time
Sequence of product technology efforts
Product technologies
Product A
Product B
Product C
Product generations
Alignment of generations
Process M
Process N
Process O
Process generations
Sequence of process technology efforts
Process technologies

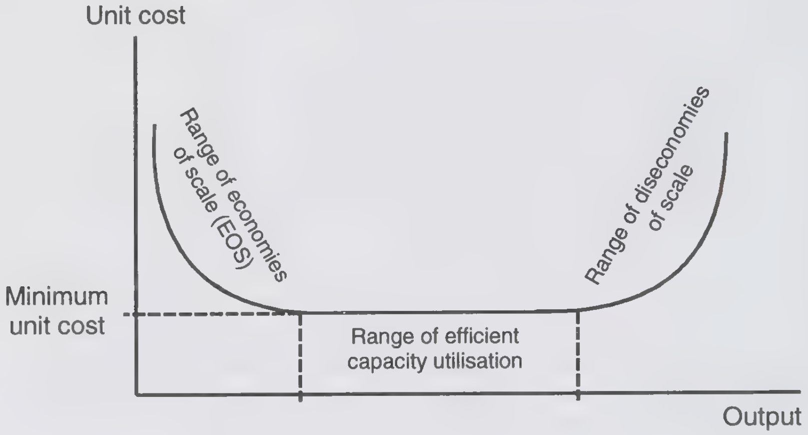
Source: K. Clark and S. Wheelright, *Managing New Product and Process Development*, Cambridge MA: Harvard University Press, 1993.

Competitive advantage—capacity and cost position

The second source of sustainable competitive advantage is having a low-cost position in the market. Having a low-cost position relative to rivals comes about either because of a company's scale of operations, its more efficient utilisation of asset capacity, or through accumulated knowledge or experience not otherwise embodied in the economics of production.

Basic microeconomics tells us that companies achieve cost advantages through the spreading of fixed costs and efficient use of capital and labour. In economists' jargon, this process is known as utilising *economies of scale* (EOS). Figure 4.10 shows the impact of the size of operations on unit cost. Companies seek to exhaust economies of scale by choosing the appropriate technologies and plant sizes. The efficient range of production is in the flat portion of the unit cost curve, where unit cost is minimised. Production below this level is

Figure 4.10: Economies and diseconomies of scale



inefficient since unit cost could be lowered with increased output. Above this range the company is encountering diseconomies of scale and unit costs are rising with output. At some point, the company should consider building another plant rather than continually facing these increased costs.

The issue of efficient level of scale is quite important to many domestic Australian companies since the combination of protectionist government policies and shipping costs has led to Australian operations being set up that are clearly below the level of scale considered efficient elsewhere in the world. For example, every Australian automotive producer operates at dramatically low levels of capacity when compared with the 200,000+ cars considered to be minimally efficient elsewhere in the world (see table 4.4). The implication of this fact is that these plants are unlikely to be viable if forced to compete against plants elsewhere in the world. This is evident from Ford's public appeal for the government to rethink its commitment to lower automobile import tariffs.

The second source of cost advantage arises from what are known as *economies of scope* or *synergies*. Economies of scope (EOSc) arise because of the ability to spread production and service technologies across products. Part of the impact of economies of scope comes from the more efficient utilisation of capacity (in a sense, economies of scale). However, the true value of economies of scope is in the ability to share assets, be they physical plant and equipment, technical knowledge or intangible brand assets. Let's go back to the Procter & Gamble discussion in chapter 2. P&G makes use of economies of scope in its marketing research function since the knowledge from research on one product can be used for the marketing of other products. More importantly, P&G can do marketing research for each product more efficiently because it is doing it for a host of

Table 4.4: **A comparison of motor car production operations**

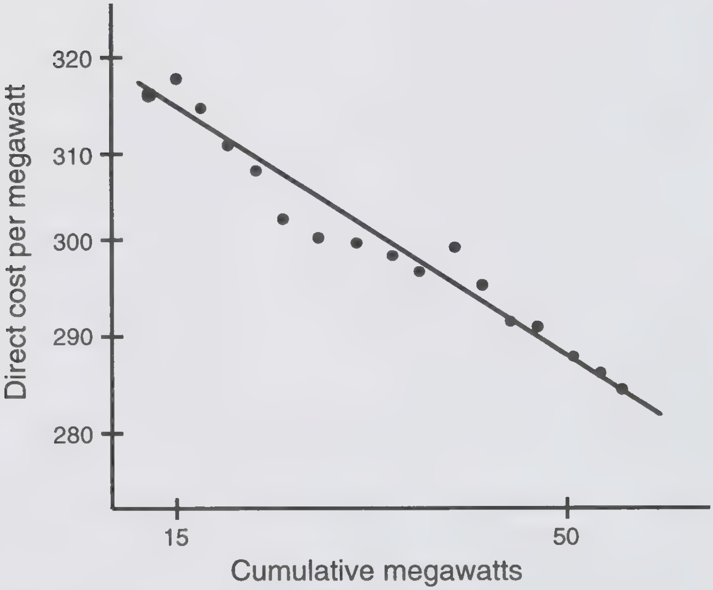
Plant	Estimated 1992 output[12]
Nissan Clayton (Aust)	23,000
Toyota Dandenong (Aust)	27,000
Ford Homebush (Aust)	20,000
Ford Broadmeadows (Aust)	63,000
GM Holden Elizabeth (Aust)	65,000
Mitsubishi Adelaide (Aust)	35,000
GM Saturn (US)	250,000
Honda Marysville (US)	360,000
Toyota Burnaston (UK)	200,000

different products. In this sense, it is the sharing of knowledge and not the size of the marketing research function that is important. Alternatively, P&G's expansion into different cosmetic lines was driven by the desire to use its distribution assets more efficiently. The distribution system is driven by the cost of moving small items and it doesn't matter very much what the boxes of items contain.

The third source of competitive cost advantage is in *accumulated experience*. It has long been recognised that as an individual or organisation gains experience with a task, it becomes more efficient at doing that task. From the labour side we can see this embodied in *learning*. From the physical asset side we can see this embodied in *technical progress* or *process improvement*. No matter how we wish to approach this phenomenon, it is clear from empirical and anecdotal evidence that companies find that their unit costs decline as they gain experience with the ongoing, cumulative provision of a good or service. This notion of an 'experience effect' was popularised by the Boston Consulting Group during the 1960s and has become a buzzword in the business lexicon.

Figure 4.11 provides a fairly typical example of an experience curve. This example analyses Westinghouse's cost of producing steam turbine generators during the period 1946 to 1963.[13] We see that unit cost declines with cumulative production where this is defined as the cumulative megawatts produced (not the number of turbines). During this period, Westinghouse saw its cost of production decrease by approximately 15 per cent while its cumulative output

Figure 4.11: **Westinghouse's turbine generator cost as a function of cumulative megawatts of production**

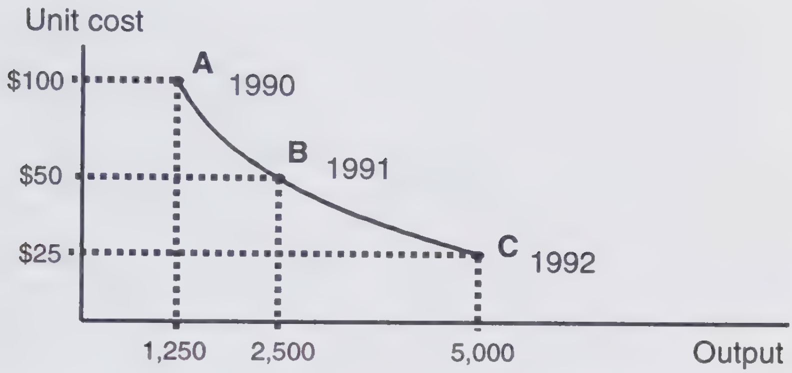


increased three- to four-fold.

One needs to be careful, however, in making hasty judgements based on the simple correlation between cumulative production and cost. This is seen in figures 4.12 and 4.13. Figure 4.12 shows the unit cost of production for a company in the years 1990 to 1992. The company's output rose from 1,250 units to 5,000 units and its unit cost fell from $100 per unit to $25 per unit. Is the $75 cost gain all due to cumulative experience? No. To see where the problem is, remember that there is something out there called economies of scale. If we look at figure 4.13, we see that points A, B and C are simply three points on three separate unit cost curves, all of which exhibit economies of scale. Recognising this, we can separate the observed cost changes into the effect due to scale efficiencies and the effect due to experience. From 1990 to 1991 the $50 cost gain is split 50:50 between the effect of larger scale (the movement from A to A) and the effect of greater experience (the movement from A to B). The 1991 to 1992 cost gain of $25 is a $10 scale cost gain (the movement from B to B) and a $15 experience effect (the movement from B to C).

The strategic benefits of a superior cost position centre around three points. First, there is the ability to under-price rivals due to lower costs. The ability to

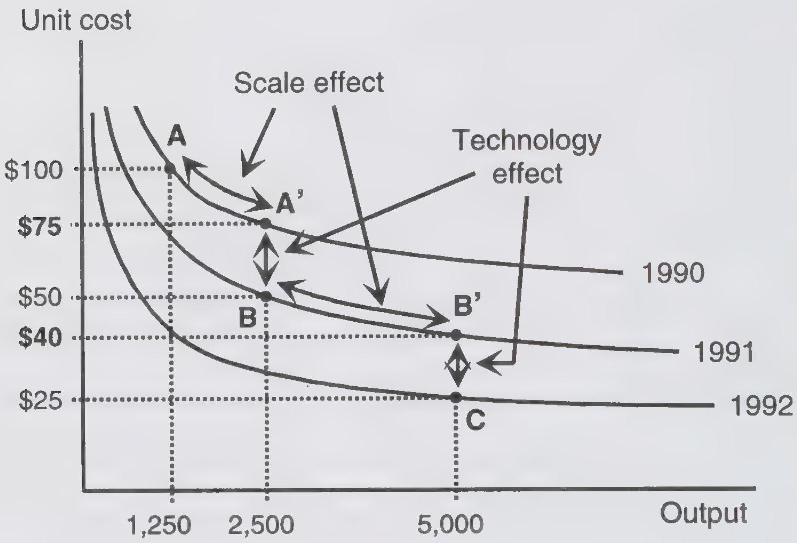
Figure 4.12: **Cost movements over time**



undercut rivals allows the firm to use its leverage to either gain market share and/or profitability or to threaten rivals with a price war they would lose should they 'misbehave'. This was Saudi Arabia's strategy during the heyday of OPEC. Since it had the largest capacity and the lowest costs of all the OPEC producers, it could keep malcontents in line through threats that it would expand its own production. While doing so would hurt the Saudis, it would impose proportionally more pain on the higher cost producers. Second, a lower cost position permits the firm to earn greater profitability in a world where price is not a controllable factor. Therefore, even in commodity-like markets firms can earn profits through the judicious control of their cost position. Many Japanese firms use ridiculously low yen–US dollar exchange rates as targets for cost goals (although none predicted 80 yen to the US dollar!). As the US dollar fell against the yen, many Japanese firms were able to maintain some profitability even in the face of enormous price pressures. Much of the US trade deficit with Japan can be attributed to the fact that Japanese firms (until recently) did not have to suffer losses with falling real prices. Finally, superior cost structures, driven by experience effects or economies of scope, permit firms to reap first-mover advantages. One major benefit of early entry is that it gives a company a head start on the learning and experience route. From an experience perspective, this advantage is difficult for rivals to duplicate. From an economies of scope perspective, this advantage may be transferable to other products and services, providing the firm with an ever-growing sustainable competitive advantage.

A firm's cost advantage comes from three related sources: its efficient utilisation of the scale of its operations, the efficient use of joint assets, and its use of accumulated experience. The implication of these factors is that the corporation's asset base bestows upon it unique advantages and disadvantages

Figure 4.13: **Scale and technology effects of cost movements over time**



that translate into its cost structure.

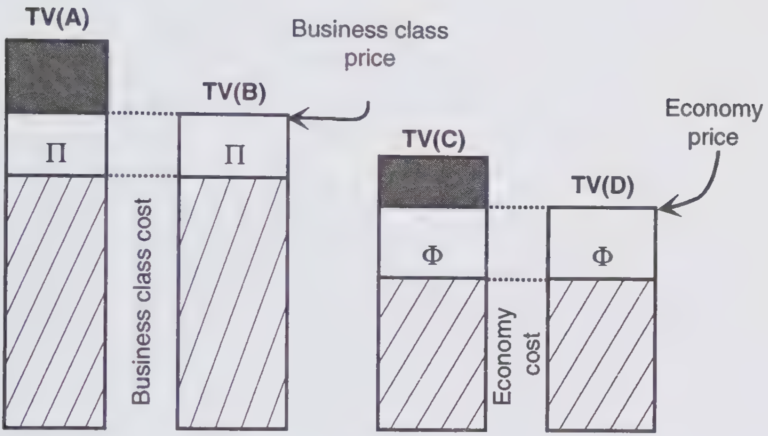
Competitive advantage—segmentation

The third primary source of competitive advantage is market segmentation. Stated simply, market segmentation is a recognition of the heterogeneity of market participants, in terms of both customer value and producer cost.

Segmentation arises, first and foremost, because of heterogeneity in the customer's valuation of a product or service. This heterogeneity can arise either because there is an innate value difference among customers (they value the product differently) or because there is a net cost difference in serving different types of customers. Without customer differences, segmentation would not exist.

Take airline travel as an example. Basically, the cost of operating an aeroplane between two points is fixed, being driven by fuel, depreciation, and labour costs that do not change with the number of people on the plane. However, airlines successfully charge different prices to different classes of customers. For example, the one-way business class fare between Sydney and Canberra is $166 while the unrestricted one-way economy class fare is $138 (restricted economy fares can be as low as $69). The seats are marginally larger in business class and

Figure 4.14: Valuation and segmentation



you receive a hastily served 'mealette' but the meal and seat are hardly worth between $28 and $97 to most people taking a twenty minute flight. Essentially, the airlines are pricing based upon the customers' differences in the need to get to a location at a specific time and the willingness to commit to a schedule well in advance. For business and leisure travellers these differences are sufficiently large and well-structured that the markets are easily segmented.[14] The second driving factor behind segmentation is the cost of servicing different customers. Business travellers have a need to work while travelling. This creates a demand for space and comfort that implies that servicing the business customer is more costly since each business class seat takes up the space of 1.5 economy class seats.[15]

In general, segmentation is driven by a combination of cost and customer differences. Figure 4.14 is an example again based on the airline industry. We have four customer types and two classes of possible service. The customers' valuations are shown by the height of the bars (and labelled TV). *Valuation is defined as the maximum amount the customer is willing to pay for the product.* The costs of the two services are shown by the height of the cross-hatched boxes. Given the customer valuations and the costs of the services, the appropriate segmenting prices are to charge TV(D) for an economy class seat and TV(B) for a business class seat. Two customers (B & D) are just indifferent to purchasing the product (the price equals their maximum willingness to pay). Two customers (A & C) would be willing to pay more for the seat (represented by the dark shaded area) but to charge them the higher price would cause B and D to exit the market. The airline earns profits of Π from each business class customer and from each economy class customer.

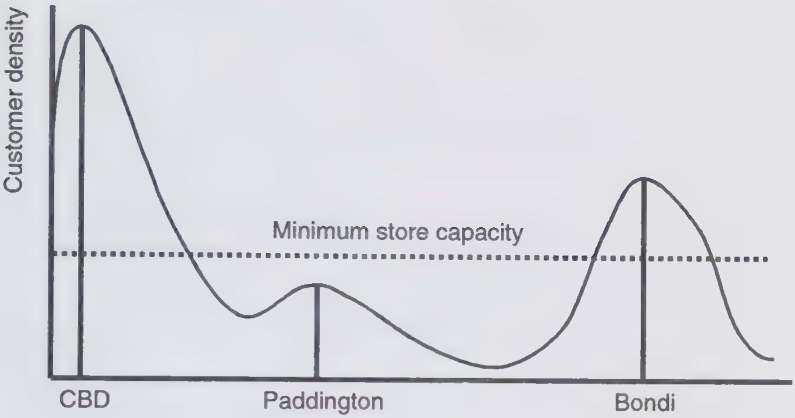
The above example is a simple case of segmentation where the producer is able to separate customers successfully into appropriate classes based on some observable characteristics. However, this example of segmentation requires some market power to make it work. Faced with real market competition, the difference between business class and economy class seats would quickly come to reflect the underlying costs of providing those seats rather than differences in customers' willingness to pay for the privilege. A more general way to view segmentation is to recognise that markets of heterogeneous customers are made up of sub-markets (or niches) of relatively homogenous customers. Redefining one's position so as to dominate a sub-market allows a company to become a quasi-monopoly in that sub-market.[16,17] We can think of this type of segmentation in two ways: geographically and perceptually.

Geographic segmentation represents segmentation based upon two factors—customers have limited search time and resources and the size of the market is limited. Take as an example two village shopping areas of Sydney—Paddington and Bondi. David Jones and Grace Bros need to decide where to build a new store and both already have stores in the CBD. They both know that the constraining factor is that customers do not like to travel far to go to a store (assume customers shop only at the closest store). Grace Bros already has store designs and is known to be ready to make a decision. David Jones will make its decision several months later. Given the density of potential customers (customers are densely located around the village centres, as represented in figure 4.15) where do they build their stores? The answer is relatively simple, they both build their stores in Bondi. If Grace Bros chose to build in Paddington, David Jones would build in Bondi since that would ensure that it captured some percentage of the Paddington customers (some would go to the CBD and some to Bondi) but Grace Bros' Paddington store would get none of the Bondi or CBD customers.

Suppose a store like Daimaru was deciding on whether and where to enter the Sydney market. Where might it want to build a store? Bondi is now 'full' with two competitors; a third would simply make everyone unprofitable. Paddington does not have enough capacity to justify a store on its own and is too close to the CBD. The only option is the CBD, if its market is sufficient to cover the capacity of a third department store. Grace Bros and David Jones, by judiciously choosing their store locations, have severely limited Diamaru's options and perhaps completely excluded it from the Sydney market.

Segmentation based on perceptual differences in products is very much like geographic segmentation in that it relies on the fact that customers prefer to be 'near' products that satisfy them based on their perceptions of the attributes of

Figure 4.15: Segmentation and spatial location

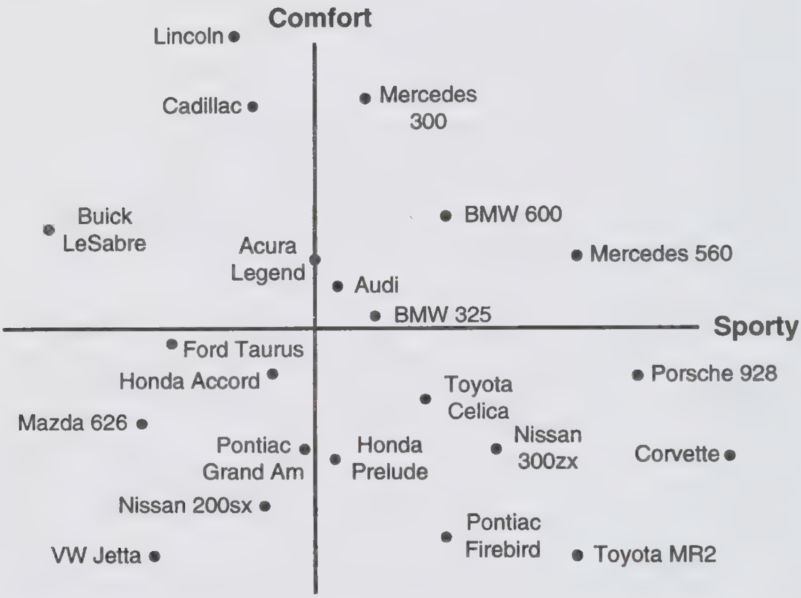


the products. The key to *perceptual segmentation* is finding the locations of relatively homogenous customer groups in an otherwise heterogeneous market. An excellent example of perceptual segmentation is found in the case of motor cars. The perceptual map in figure 4.16 shows two of the many dimensions that consumers consider to be important in evaluating motor cars—comfort and sportiness.[18] The map also shows US consumers' evaluations of a number of brands on these dimensions.

Just as in the case of geographic segmentation, we need to know how customers value the perceptual dimensions. In reality, customers will be located all over the space; however, there will be distinct masses of customers who will cluster around centre points, referred to in the marketing literature as 'ideal points'. In figure 4.17 we see that there are seven distinct categories of customers which we have given descriptive labels. Each category is identifiable by its psychological and demographic profile. Because each cluster is limited in size it represents a sub-market that can be weakly dominated by a limited number of producers. This can be seen by overlaying the two perceptual maps as is done in figure 4.18.

The 'Older Establishment' cluster is dominated by the land yachts, Lincoln and Cadillac, while the 'Mid-Life Crisis Crowd' is the focus of the boy-toys manufacturers, Porsche and the Corvette. Note, also, that we don't need to know each customer's exact profile since the customer will do some of the self-selecting for us. If we are marketing a car to the 'Yuppie' crowd, it may be useful to advertise in the *Wall Street Journal* or *Financial Review* and to put advertisements on shows like 'Seinfeld' and in trendy cinemas showing films like *Orlando*. However, because these individuals know what they want, they will

Figure 4.16: **Perceptual position of motor cars**



Source: Adapted from G. Urban and K. Starr, *Competitive Marketing Strategy*, New York: Prentice Hall, 1991.

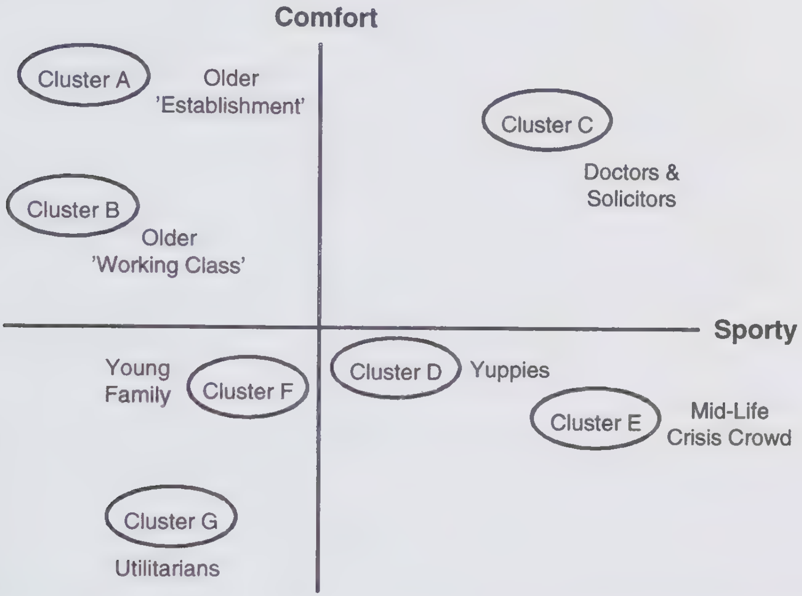
look for cars like the BMW325. As a BMW marketing executive all we need to do is make sure they are getting the information as to why our car is better than the Celica, the Legend and the Audi.

The keys to market segmentation are relatively straightforward:

- Customers must be heterogeneous in their needs and wants.
- The needs and wants must be moderately observable or related to observable factors.
- Although heterogeneous, there must be pockets (segments) of homogeneity.
- The size of the segments needs to be sufficiently small, relative to efficient production capacity, to provide for a small number of rivals.

However, as with most endeavours, the devil is in the details. Conceptualising segmentation strategies is reasonably simple. Operationally executing them is

Figure 4.17: Clusters of customer segments


Comfort
Sporty
Cluster A
Older 'Establishment'
Cluster B
Older 'Working Class'
Cluster C
Doctors & Solicitors
Cluster D
Yuppies
Cluster E
Mid-Life Crisis Crowd
Cluster F
Young Family
Cluster G
Utilitarians

Source: Adapted from G. Urban and K. Starr, *Competitive Marketing Strategy*, New York: Prentice Hall, 1991.

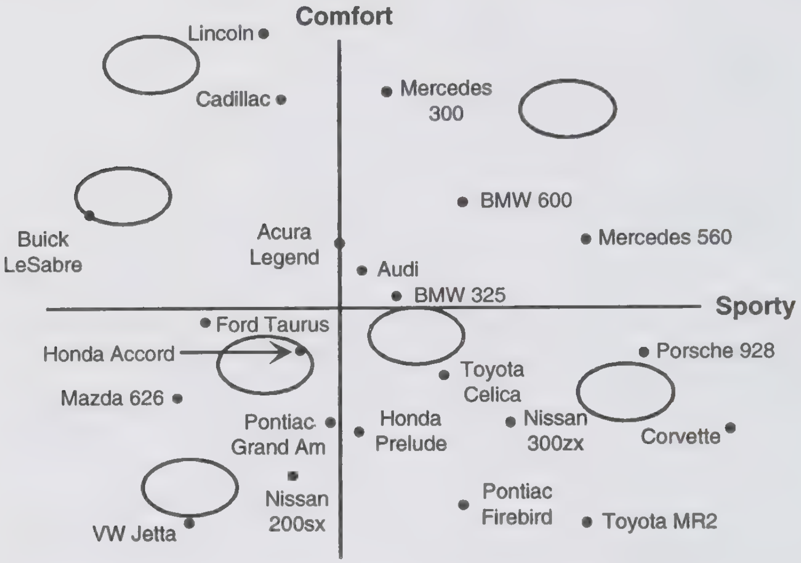
what separates the theorists from the strategists. To quote Sun Tzu, 'one may know how to win, but cannot necessarily do so'.[19]

Vertical and horizontal integration

Vertical (VI) and horizontal integration (HI) represent the extension of the company's value activities either upstream or downstream in the process of the provision of a good or service (VI) or across the provision of more goods and services (HI) (see figure 4.19). The question we wish to address in this section is what drives this integration? Our discussion will focus on using the transaction cost (TCT) framework from chapter 2 to provide an integrated way of approaching both VI and HI.

Using the TCT framework in light of our discussion of the value chain we come up with a ready understanding of the pressures towards VI. If we disassemble the value chain into its components, we must ask a simple question. If two activities are integrated rather than transacted at arm's length in the

Figure 4.18: Products and customer segments

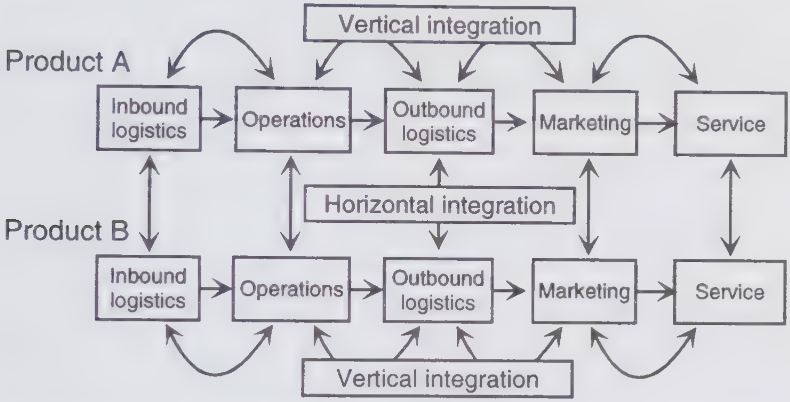


Source: Adapted from G. Urban and K. Starr, *Competitive Marketing Strategy*, New York: Prentice Hall, 1991.

market, what are the gains to the two value producers? A necessary condition for VI is that the separate components of the value chain are more profitable when linked than when separate. Although it may appear simple that there are many cases where 'gains' exist, you must keep in mind that the types of gain we are talking about are those gains that cannot be contracted. In other words, VI is necessary only in circumstances where the two value producers cannot write an acceptable external market contract; that is, contracts are incomplete. We can have situations where clearly there are gains from coordination but the two parties do not need physically to own one another. Therefore, in looking for the drivers of VI we are looking for the factors that make market transactions inappropriate or very costly. We can narrow these factors down to three: *taxes*, *coordination* and *market failure*. The first two factors are simple cost economics issues. The market failure issue gets to the heart of VI strategy.

The tax incentive towards VI is the most obvious. Since market transactions are taxed and non-market transactions are not in many cases, companies have an incentive to internalise market activities through VI. However, it must be said that this is the least convincing argument for VI and is valid only in situations

Figure 4.19: Vertical and horizontal integration



where the gains from tax avoidance are large and the organisational costs of vertically integrating are small. A variant of the tax incentive issue is transfer pricing. As companies become more global in their orientation, the incentive to minimise a company's world-wide tax liability by judicious transfer pricing has increased. It is estimated that 70 per cent of all trade between Europe, the US and Japan is between subsidiaries of companies. Given that the companies have the choice of what to charge as transfer prices, companies with divisional operations can move profits by charging high transfer prices to divisions operating in high tax countries. The US government caught on to this a number of years ago and has strict rules for transfer pricing. The Australian Tax Office has only recently adopted a rule-based approach to this most obvious means of tax avoidance available to the vertically integrated company.

Companies also vertically integrate to avoid the organisation costs of repeated transactions.[20] For example, many companies run their own shipping operations between facilities while others use third-party contractors. Independent of the issue of whether or not third-party contractors are more efficient, the decision to internalise the shipping operation is driven by the composition and repeated nature of the activity. For example, USX (the predecessor of US Steel) handles its own mail and other deliveries between Pittsburgh and Chicago, a distance of almost 800 kilometres. However, it relies on courier services to deal with immediate shipping needs between these points. The reason for the difference is that courier shipping is an infrequent transaction while the daily mail is a repeated transaction for which there are some USX-specific needs. From a cost minimisation issue, one should be internalised—the daily mail service; the other should not—the courier service. Interestingly, as USX has reduced its steel operations and as more private mail systems have arisen that will provide tailored services, USX has contracted more and more of its mail operations to vendors. VI driven by simple joint cost economics is the most susceptible to outsourcing as the underlying costs change.

The strongest incentive for VI exists because of market failure. Market failure exists when external contracting at arm's length does not provide the incentives that centralised ownership could provide. This brings us back to the issues of information impactedness, opportunism and incomplete contracts. As intermediate products get passed through the value chain, the question is what of value is being transacted between the parties? Take as an example Eastman Kodak. Kodak relies on Eastman Chemicals to provide it with some of its material inputs for producing film and related products. But why doesn't Kodak purchase its chemicals in the open market? After all this is quite a competitive price-driven market. The answer is that it does to some degree, but chemical technology is integrally important to innovations in photographic processing. Not only are chemicals and money being traded between Eastman and Kodak but know-how is being passed between these two parts of the value chain as well. Although it may be questionable why a chemical company needs to own a photographic company, it is more obvious why a photographic company would want to own a chemical company. The Kodak case is a nice example of getting the most from a vertically-integrated organisation. If Kodak had to rely on Eastman for all its chemicals and Eastman on Kodak for all its sales, a real small numbers opportunism problem would arise. However, both Eastman and Kodak are free to contract with other parties for basic sales and purchases while keeping in-house that portion of the transaction that has joint value, shared technical knowledge.

Vertical integration is valuable when there is joint value arising from trade in intermediate goods and services in the value chain and such trade cannot be adequately contracted in the open market. The rise of outsourcing and the reduction of material suppliers by many companies over the last few years is ready testimony to the fact that much actual VI is probably not necessary. The decline in VI is also driven by the ability to write more complete and enforceable contracts. Twenty years ago, quality verification and coordination were pretty much people and pencil tasks. Today, advances in computer technology allow for a transparency between companies that before only existed imperfectly, even among the divisions of a company. The incentive and coordination problems that drove firms to vertically integrate in the past have been partially resolved through technology. The decline in the role of VI as a source of strategic advantage is seen in Case 4.3.

Case 4.3 The benefits of mini-mills

There are three basic types of steel mills: integrated mills, specialty mills, and mini-mills. Specialty mills account for a small amount of output (under 5 per cent of world-wide tonnage) but produce expensive products. Integrated mills are able to process coke and iron into a variety of steel products of different sizes and weights. Mini-mills use locally acquired scrap to produce high-volume, low-cost steel of limited variety primarily for local markets. The key distinction of the mini-mill is that it has focused on a single product value chain while limiting its backward and forward integration. The integrated mill relies on its ability to produce a large range of products and its control over the entire production and material sourcing process. The results in terms of cost are such that mini-mills can operate in commodity markets abandoned by the integrated mills. This can be seen in the table on the next page in the time it takes to produce a ton of steel at various types of mills.

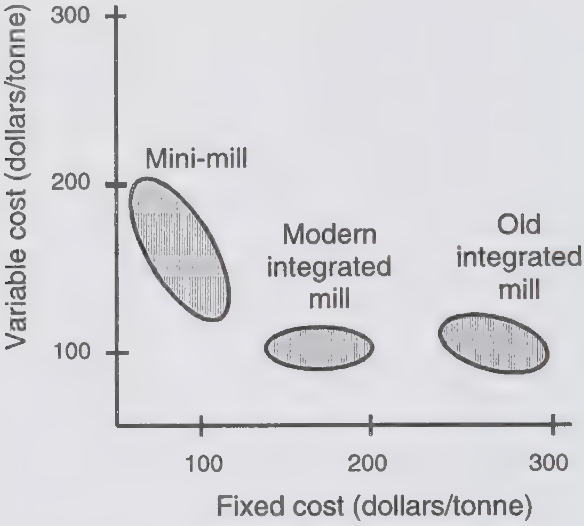
The choice of the mini-mill structure flies in the face of the supposed gains that steel manufacturers get from vertical integration. However, vertical integration in the steel industry comes at a cost as is seen in the graph on the next page. The mini-mill which forgoes a significant percentage of the process of providing steel can reduce the ratio of fixed to variable costs from the 1.5:1 found for modern facilities to 1:1.5. Much of this gain comes from the ability to focus production and research and development. Specialised production provides for more efficient use of plant space. Focused R&D has allowed the mini-mills to get a more effective per dollar return since it is spending more per product on R&D. This has led to the ability to operate smaller, more localised facilities and to remain profitable at prices that forced integrated mills to abandon markets.

Source: Adapted from *Chaparral Steel* written by M. Kroll and J. Simmons.

Horizontal integration arises because of the shared resources that exist across product boundaries. As in the case of VI, we must question why the gains from such integration cannot be externally contracted? However, unlike VI, HI is much more likely to require the physical joint ownership of assets since more true physical sharing occurs. To use a sport analogy, VI is like a relay with a baton being passed from one runner to the next, whereas HI is like a gymnastics team competition; all the participants are doing all the events using the same equipment with each contributing to the total result. The key to HI is the existence of complementary assets. The usage of the assets available to one product have spill-over benefits to other products. It is the existence of this public good nature of the assets that pushes the company towards joint ownership.

Before talking about successful cases of HI let us note some of the more dubious attempts at gaining synergies across product lines. Perhaps the largest failure to date has been in the area of software and hardware integration. Apple Computer is just one example of a hardware producer thinking that there were

Fixed to variable cost in steel processing



Man hours required to produce a tonne of steel

Integrated mill	6.91
Japanese integrated mill	8.61
Mini-mill	2.00

shared resources between hardware design and software design. After acquiring Claris it found the grail to be a fake and divested itself of the software operations. NeXT Computer went the opposite route. Starting with a base in software it tried to design workstations. Today it is back to focusing exclusively on software. A third example is Allegis, the ill-fated move by United Airlines to get into the hotel and car rental business. For some reason, United executives thought since people got off planes, rented cars and went to hotels that all three should be owned by one company. By the same logic the university should own my house and operate the bus I take to work every morning. After several years of depressed stock prices and focused competition from American and Delta, United saw the light and got back into the airline business. All these examples are indicative of cases where management sees what we might call 'vapour' synergies.

HI arises because of either demand-based synergies—customers perceive linkages in the products—or because of supply-based joint resources—the cost of providing a bundle of products or services is cheaper than providing these separately. Demand-driven HI is the most risky since it relies mainly on perceived linkages rather than actual linkages. For example, shared brand names are directed at customers' cognitive link between the products and these can change rather quickly. Cost-driven HI is a more solid source of competitive advantage since it is grounded in the fundamentals of the production and business processes. Most companies attempt to link both sources of HI into their strategies. Colgate Palmolive builds its strategy on cost-driven HI while attempting to develop demand linkages through branding.

Amcor and Pacific Dunlop provide two Australian examples of HI. In the 1980s Amcor purposely changed its strategy and moved from simply being a pulp and paper company to a diversified paper and packaging container company. Part of Amcor's strategy was to VI downstream by acquiring many of its purchasers of paper. At the same time it moved to extend its expertise and capacity in paper to containers and learn from its newly acquired packaging companies. More recently, it began extending its paper operations into the lower end of the fine paper market.

Pacific Dunlop is a curious example of what appears to be (and what the press perceives as) HI since its expertise appears to be centred around internal administrative operations rather than traditional production operations. Pacific Dunlop operates over 100 profit centres (eight to nine major profit centres with profit centres below these) across five distinct groups—consumer products, distribution, health care, automotive, and building and construction. Within each group there are clearly joint assets to be capitalised as was evidenced by the 1991 acquisition of Petersville Sleigh as a way of strengthening Pacific Dunlop's food operations. The hope was that Petersville would provide the company with the capacity and breadth of product line to move more strongly into Asia. It did not. However, much of Pacific Dunlop's real strength appears to be in financial planning and monitoring of diversified multinational operations, a skill it has acquired and refined over decades of complex operations. In this sense, the company is similar to Philips with, if it could possibly be imagined, even less focus.

Vertical and horizontal integration are not the only ways that companies share resources. The most obvious alternatives to VI and HI are *licensing* (and franchising) and *joint ventures* (JV). Licensing is useful when separable joint assets exist. For example, Liz Claibourne has built up a considerable name in women's casual but stylish clothing. The brand name is clearly an asset of some value as its stock performance has shown. However, Liz Claibourne's production and marketing abilities are limited and the company has purposely chosen to focus on clothing and some limited accessories. Yet, the Liz Claibourne name appears on shoes (made by Marx and Newman), eyewear (made by Tropi-Cal), hosiery (made by Kaiser Roth), optics (made by Pal Optical) and patterns (made by McCall), all through direct licensing. Licensing makes sense in this case since a brand name (or trademark) is easily contracted and doesn't rely on directly shared resources.

Joint ventures rely on shared and inseparable resources. In other words, short of one company purchasing the other company entirely, the only way to access joint resources is via a bilateral sharing arrangement. For example, Nestlé and Coca-Cola formed a joint venture in 1991 to produce and market ready-to-serve coffee, tea and chocolate drinks. This venture links Nestlé's world-wide production system and expertise with Coca-Cola's world-wide marketing and distribution resources. This is an example of a horizontal JV. A vertical JV exists in the case of Nestlé and General Mills. This venture combines General Mills' production of cereal products (something Nestlé does not do) and Nestlé's European marketing and distribution (something General Mills does not possess).

HI and VI, along with licensing and JVs, define the asset structure of the company and, therefore, the strategic strengths and weaknesses of the firm. Because the opportunities for asset integration that become available to the firm over time are driven by a combination of the firm's initial asset structure, its management's foresight, its environment and plain luck, each firm's asset structure is unique in many ways. This uniqueness implies that companies will pursue different strategies and will not react uniformly to internal and external competitive and economic threats.

Diversification and the asset portfolio

Both VI and HI are examples of diversification since they represent the movement of the firm from a core of activities in specific markets to other related activities and markets. VI and HI, as we have discussed them above, are examples of *related diversification*—the diversification into similar lines of business or markets.[21] At the other extreme is what is known as *unrelated*, or *conglomerate diversification*—the diversification into unrelated lines of business. Finance theory tells us that related diversification has value to shareholders whereas unrelated diversification is inefficient since it represents the kind of portfolio diversification that can be done more cheaply by investors in the financial markets.

Recent studies seem to confirm the finance view of diversification. Rumelt[22] examined the return on capital for 187 businesses and found that the unrelated

Table 4.5: Diversification and performance

Diversification type	Return on capital (1) (per cent)	Industry return on capital (2) (per cent)	Difference (1)–(2)	Difference with UDs
Dominant related	9.63	9.22	0.41	2.30
Non-dominant related	10.51	9.61	0.90	2.79
Unrelated (UD)	7.55	9.44	-1.89	

Source: R. Rumelt, Diversification strategy and performance, *Strategic Management Journal*, 3, 1982, 359–69.

diversifiers were the worst performers of all. In table 4.5, the returns to the three groups are shown: related diversifiers who are dominant in their industries, related diversifiers who are not dominant in their industries, and unrelated diversifiers (UDs). The important columns are the last two. Column 4 (Difference (1)–(2)) adjusts the firm's return for its industry group. Column 5 (Difference with UDs) takes the difference between this estimate of performance for the dominant related and the non-dominant related diversifiers and compares it with the performance of the unrelated diversifiers. The conglomerates under-perform both their own industry and the related diversifiers by a significant amount.

If conglomerates are such poor performers, why do we find strong anecdotal evidence that conglomerates are surviving world-wide? The *kieretsu* in Japan and *chaebol* of Korea along with the enormous Singapore and Hong Kong trading companies seem to indicate that there is some value somewhere in conglomerate diversification. In China, CITIC has continued to perform well in spite of the diversity of the businesses in which it operates. So where is the value?

Conglomerates do two primary things: they replace the external capital market with an internal system and they provide diversification benefits. Much of the discussion surrounding conglomerates has focused heavily on their diversification aspects and this is clearly where they are on their weakest footing. However, the one diversification-based value found in large organisations that has some financial logic is that they can weather cash flow fluctuations better than more focused companies. From a societal point of view, a world where companies continuously go bankrupt and then arise phoenix-like when economic conditions improve is hardly ideal. There are real economic costs to bankruptcy that the society and companies work to avoid. But we must also ask: Why can't these bankruptcy-avoidance benefits be captured by related diversifiers. The answer lies in the fact that related diversification, by its very nature, tends to link cash flows that are positively correlated. As a related diversifier becomes more and more focused around a core strength, it is very likely that the variance of its cash flows will rise rather than fall. The hardest problem for a related diversifier is finding products and markets that take advantage of its core strengths while at the same time provide negatively correlated cash flows.

The second source of diversification benefit is in the formation of an internal capital market. Here we must question why an internal capital market is more efficient than an external capital market. There are two major benefits from an internal capital market. First, it may be possible to fund projects of both larger and smaller size and to do so more quickly and economically than an external capital market would allow. In one sense, the larger organisation is like a unit trust of smaller projects. It can borrow more cheaply in the external market than would be possible if the smaller projects were unbundled. In this sense, the company is just a securitised bundle of projects. At another level, the diversified firm may be able to take on projects whose risk is simply too great to be taken on by any one or group of smaller companies. In other words, the level of the bet a company is willing to make is based on their wealth position. I could not, for example, play golf with Michael Jordan.

However, the real benefit from diversification comes from the ability to resolve borrower–lender agency problems. An internal capital market allows for information sharing between the 'financier' and the 'borrower' in a way that the external markets can only dream about. Such internal funding allows for better control over the use of funds and makes it less likely that borrower and lender will attempt to expropriate one another. This implies that internally financed projects will have lower risk, and generally higher return, than externally funded projects. As an example, consider a case where there is an independent borrower and independent lender. A classic problem found in this situation is what is known as *moral hazard*. Once the lending contract is set, the borrower has an incentive to increase the riskiness of the project which has been financed. By doing so, the borrower increases his/her expected return while decreasing that of the lender. Although the lender tries to control for this eventuality through the terms of the contract, it can only be done imperfectly. The result is a world where certain types of debt contracts can be imperfectly priced. Internal capital markets resolve this problem by allowing the lender direct and controlling access to the borrower. Because they are one-and-the-same organisation, the lender does not have to jump through legal hoops to take control or terminate the project. In this sense, internal capital markets are like debt markets with all the benefits of equity ownership.

Table 4.6: Examples of conglomerate operations

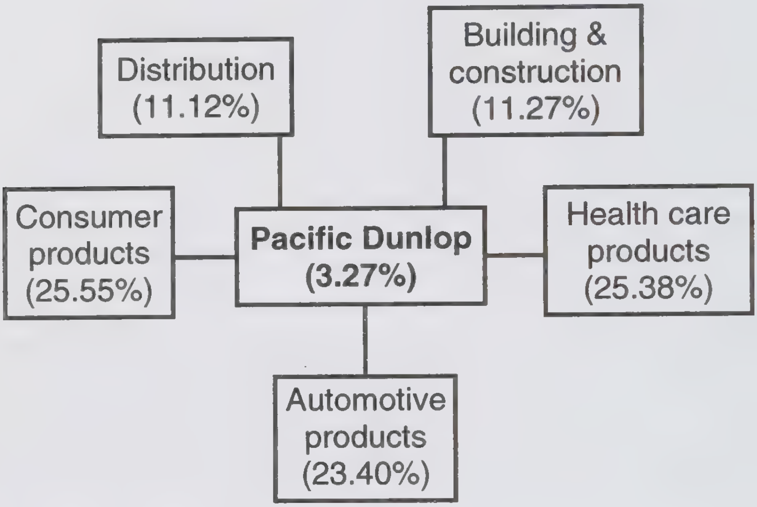
Pacific Dunlop	TATA (India)	Hyundai (Korea)
Consumer products	Steel and cement	Steel and shipbuilding
Automotive products	Automobiles	Automobiles
Distribution	Trading (Distribution)	Trading
Operations	Electrical goods	Electronics
Health care products	Hotels	Construction
Construction	Chemicals	Machinery
	Investments	Finance/insurance
	Tea	Retailing

The last question we must ask is why would conglomerates be better than related diversifiers at resolving borrower–lender problems? The answer is that there is no inherent reason why they should be better. However, just as with banks or other investors, conglomerates value diversification since their ability to control diverse projects would be lost if all the projects had the same types of cash flows.

If we examine the history of conglomerate organisations we find three consistencies. First, they have been declining dramatically in the last twenty years as financial markets have become more and more efficient. Second, conglomerates tend to concentrate in developing countries more so than in developed countries. That small number of conglomerates which exist in more developed countries generally have large operations in developing and third-world countries. Both of these factors lend credence to the above arguments as drivers of diversification. In countries like India, Hong Kong and Korea, capital markets are not as efficient in supplying capital and controlling risk as in the major economies. Groups like TATA in India have the ability to avoid the pitfalls of inefficient market transactions and regulations by internalising their financial activities. Although not ideal when compared with the ethereal world of efficient markets, it represents a unique asset for a company operating in financially inefficient India. The question with groups like TATA is their ability to compete once their previously protected and inefficient markets open up and their raison d'être disappears. Third, conglomerates tend to cluster around specific types of industries—typically primary industrial product groups such as automobiles, construction, trading, and heavy manufacturing. Table 4.6 compares three fairly typical conglomerate operations.

If we examine Pacific Dunlop in more detail we find a reasonably typical example of a conglomerate that is slowly, some say too slowly, unwinding itself of

Figure 4.20: The structure of Pacific Dunlop before food business divesture (employment percentages in parentheses)


Distribution (11.12%)
Building & construction (11.27%)
Consumer products (25.55%)
Pacific Dunlop (3.27%)
Health care products (25.38%)
Automotive products (23.40%)

its ‘conglomerateness’. Pacific Dunlop has a fairly typical conglomerate structure (see figure 4.20). It has quite balanced operations in five primary areas and a very small central headquarters (only 3.28 per cent of its employees work for Pacific Dunlop parent company). Its operations are heavily decentralised with each group concentrating on developing synergistic relations within the group but not interfering with the operations of the other groups. In every respect, Pacific Dunlop is a financial holding company and its strength is as a financial control organisation, not, as its financial report appears to argue, ‘[as a producer of products] that add to our quality of life.’ The singular concern of headquarters is in seeing that assets are utilised to maximise the return to shareholders. It is not the micro-management of the individual product groups. Finally, its operations span thirteen countries, with 25 per cent of its operations in developing countries. The trend is such that this is expected to increase in the future as the company seeks out lower wage and resource platforms.

Since the early 1970s, we have seen Pacific Dunlop go through two distinct stages. The first stage was Eric Dunshea’s expansion from a focused tyre company to one operating in a host of unrelated businesses. This expansion was quite representative of the conglomerate trend of the time and the results were, as expected, quite poor. During the 1980s and to time of writing, under the stewardships of John Gough and Philip Brass, Pacific Dunlop has concentrated its

Figure 4.21: Porter's generic strategies

Competitive advantage

Competitive scope

	Lower cost	Differentiation
Broad target	Cost leadership	Segmentation
Narrow target	Cost focus	Niche

Source: M. Porter, 'The value chain and competitive advantage' in *Competitive Advantage*, New York: Free Press, 1985, 33–61.

activities more heavily on core areas—automotive products (particularly batteries), consumer products (particularly processed food), and health care products. In this sense, the company is much more of a modern conglomerate—unrelated groups that bring together more related businesses.

Summary—integrating the framework

Our discussion brings us to a point where we can integrate our framework to talk about the bases of specific types of strategies. Porter breaks up strategies based on a company's competitive advantage—based on cost position or differentiation—and its market scope—a broad or narrow market focus. From this he derives four generic strategies. These are shown graphically in figure 4.21. In broad target markets, such as industry-wide markets, Porter identifies two generic strategies: cost leadership based on capacity, scale or scope; and a differentiation strategy, based on the ability to distinguish your firm from competitors. Porter's differentiation appears distinct from our notion of segmentation, in that his differentiation is based upon a perception of a difference that may or may not encompass standard market segmentation.

Figure 4.22: Strategies based on cost position and segmentation possibilities

		Segmentation	
		Low	High
Cost position	Low	Economies of scale Process innovation Experience Vertical integration	Process & product innovation Economies of scope Experience VI & HI
	High	**Not Viable**	Product innovation Horizontal integration

However, the distinction is meaningless because we view segmentation as a reflection of the heterogeneity of the market that might encompass any host of natural customer differences, such as sex, age and demand differences as well as perceptual differences that are created by deliberative firm strategy, such as brand names, quality perceptions and image. For broad markets, Porter argues for protecting oneself from competitive attack either by having the ability to sustain profitability through lower costs (and thereby being able to face a price war or undercut rivals) or a more identifiable image (and thereby reduce customer defections).

If the firm's orientation is around narrower targets, such as distinctive submarkets, Porter argues for two different generic strategies. If the firm's competitive advantage lies in differentiation advantages such as quality, then a niche segmentation strategy is appropriate. If its advantage lies in cost, then a niche strategy based on cost is appropriate. Both strategies are what might be called focused strategies (this was Porter's original term for them); however, the source of the focus is different leading to different operational strategies.

Although Porter's typology is quite simplistic, it does focus on what we might call supply-based (cost) drivers of strategy and demand-based (positioning) drivers of strategy. Figure 4.22 gives a reformulation of his cost/differentiation strategies and relates it to the topics discussed in this chapter. The pure cost leadership (low cost/low segmentation) strategy is driven by scale, process innovation, experience and control over the value chain (VI). A pure segmentation strategy (high cost/high segmentation) is driven by product innovation and horizontal integration; the company is not concerned with being a low-cost producer but with providing sources of value. The mixed segmentation–cost strategy is nothing more than the intersection of the two narrow strategies and embodies characteristics of both. The high cost/low segmentation position is simply not tenable.

This chapter has provided the reader with an overview of some of the fundamental ideas behind the development of strategic thinking. The chapters that follow provide more detail on each of these ideas in a more concentrated manner.

Chapter 5

Achieving competitive advantage through strategic innovation

Invention breeds invention.

Ralph Waldo Emerson (1803–1882)

On a day-to-day basis, most managers are caught up in the rivalry between their firm and other established competitors. It would be a natural instinct to see this rivalry as the centrepiece of strategy. Yet, if we take any historical perspective, the most dramatic changes in industrial structure and business performance have been driven by innovation; what Schumpeter called the 'gale of creative destruction'. To understand the intense competition between established rivals, we need first to step back and ask how the industry developed, and how the process of innovation has created and shaped the industry that we now see.

With this in mind, the central focus of this chapter is on five questions:

- What is innovation?
- What, if any, competitive advantage is gained by an innovator?
- What are the characteristics of firms that do innovate? Is there something uniquely different about these firms that is sustainable?
- What strategies can later entrants follow to compete successfully against an established innovator?

- Which factors, if any, keep firms innovating?

Surrounding these questions is the role that innovation plays in defining the world in which companies compete. Innovation allows the successful company to remain abreast of competitive developments while possessing the potential to redefine the market to its own advantage. However, this same innovation creates sufficient market instability to provide potential entrants and rivals with a way around the competitive barriers set up by market leaders.

The importance of innovation in determining the product mix available in different industries can be seen in table 5.1. For a sample of companies operating in Australia, the Bureau of Industry Economics found that almost 60 per cent of 1990–91 sales was accounted for by either new or improved products.[1] This implies that many industries, such as computer software and scientific instruments, are redefining themselves every several years, providing potential opportunities for new and different companies to enter the market. In other fields, such as mining and basic metal products, competition is more direct since the products that define the market are more stable and commodity-like. This reveals the double-edged nature of innovation; it is necessary for a company's survival while at the same time sowing the seeds of potential destruction.

In the United States, Page[2] finds similar results with some interesting trends. In the past five years, approximately 42 per cent of company sales revenue came from new products with almost 79 per cent of this being internally sourced innovation. However, the executives surveyed expected almost 52 per cent of sales over the next five years to come from new products with more than 25 per cent of these new products coming from sources external to the company. His evidence clearly supports the anecdotal evidence pointing to the shortening of product life cycles generally and the increased necessity of sourcing ideas from outside the corporation.

What is an innovation?

We all recognise a major innovation after it has occurred. Our whole way of life has been transformed by the computer, the jet engine, television, monoclonal antibodies and other major waves of technology. But, in addition to these major waves, business is continually shaped and reshaped by the cumulative effect of thousands of lesser innovations. One is impressed by our inability to predict where new innovations will take us. You only have to think of films like Fritz Lang's *Metropolis*, the TV series *Dr Who* or the B-movies of the 1950s to recognise how wrong social forecasters can be in attempting to predict where combinations of innovations will lead. The uses of computer technology appear somehow preordained when viewed with the beauty of hindsight, but few could imagine even fifteen years ago the speed and directions of the development of this

Table 5.1: Sales from new and unchanged products

Product field	Totally new products	Improved products	Unchanged products
Photo & scientific equipment	36.3%	36.1%	27.6%
Computer software	35.1%	43.9%	21.0%
Appliances & electrical equipment	27.2%	43.0%	29.8%
Transport equipment	24.8%	40.8%	34.4%
Construction	24.2%	27.7%	48.1%
Miscellaneous services	23.6%	30.1%	46.3%
Agriculture	22.7%	44.4%	32.9%
Miscellaneous manufacturing	20.3%	41.9%	37.8%
Textiles & footwear	17.1%	40.4%	42.5%
Industrial machinery	16.9%	42.5%	40.6%
Wood & wood products	16.5%	45.4%	38.1%
Non-metallic minerals	12.5%	47.3%	40.2%
Fabricated metal products	12.4%	41.9%	45.7%
Chemicals	12.3%	31.4%	56.3%
Food, beverages & tobacco	9.6%	38.3%	52.1%
Paper & paper products	9.1%	55.5%	35.4%
Mining	5.5%	30.0%	64.5%
Basic metal products	5.4%	43.5%	51.1%
Total	21.5%	37.2%	41.3%

Source: Bureau of Industry Economics, Canberra.

technology seen in the 1980s.

The chaotic environment unleashed by rapid innovation leads to economic instability and hence to both threats and opportunities for companies. To help us analyse these strategic opportunities and threats, we need a language and set of concepts that can be used to give sharper definition to the role of innovation.

Let us begin by defining what we mean when we use the term innovation.

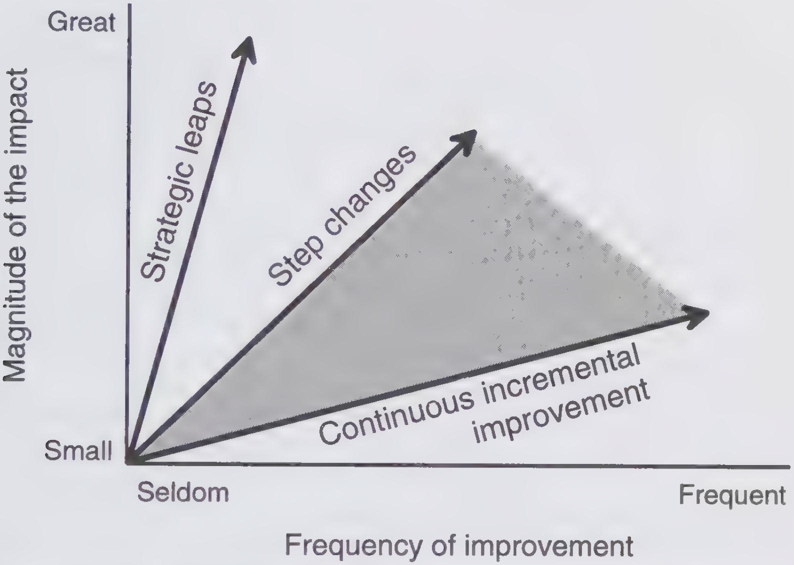
Referring back to chapter 4, we defined an innovation as a new or different solution to a new or existing problem or need.[3] We further distinguished between process and product innovation. Process innovations represent process or production improvements that lead to greater efficiency and lower cost. Product or service innovations refer to innovations that relate directly to the needs of customers. Product and process innovation are not dichotomous; that is, process improvements are many times driven by new product demands, while new products frequently arise out of developments in process engineering.

Although it is useful to think of innovations as being either primarily process or primarily product innovations, such a simplification belies the complexity of determining the source of an innovation. When we examine a product innovation like the disposable diaper we are hard pressed to come up with a complete answer to what drove that innovation. To what degree was it the demand for convenience on the part of parents, or the improvements in manufacturing that made such a product commercially viable? After all, the idea of throwing away the diaper rather than cleaning it was hardly a revolution in thought.

Sometimes it is argued simplistically that all innovation is demand driven since, as we have said, innovations represent solutions to problems or needs. However, as Schumpeter so aptly noted, consumers may not know that there is a need to be satisfied or that a need can be satisfied in the new way being presented by some manufacturer.[4] One only has to think about the first PCs (or even large mainframes) to see that the onus of proof of consumer utility was on the computer companies. The initial expansion of the market was driven not by consumers demanding new and more powerful machines but by the computer manufacturers' ability to prove to the customer that their machines did indeed solve problems that needed solving in ways that could not be done with other technologies. Indeed, IBM's slowness to enter the PC market was driven, in part, by its own management's concern about the efficacy of stand-alone PCs as true business tools.

There are many other ways of categorising innovation—based on its newness to either customers or the firm, based on its frequency, and based on its impact on either the firm's value or the customer's utility or profitability. Figure 5.1 shows how we might think about innovation on the dimensions of frequency and impact, where impact is defined as the general economic impact.[5] The largest impact is found in the cases of strategic leaps, innovations of low frequency but massive impact such as the development of the first commercial computer. Most innovation, however, occurs in the shaded area and is driven by either slow incremental change (as we might see in the case of the development of laundry detergents) or discrete changes in demand or production (such as have been seen in the development of certain types of chemicals).

Figure 5.1: Three categories of innovation

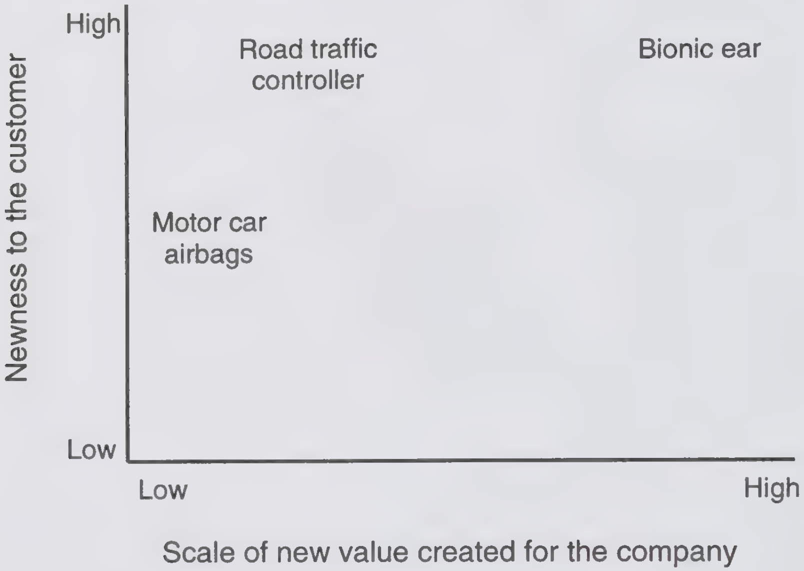


Source: R. Carnegie and M. Butlin, *Managing the Innovating Enterprise*, Melbourne, 1993.

A second categorisation is presented in figure 5.2 and is based on comparing the newness of the development to the customer with the impact the innovation has on the company. The most radical case of innovation presented is that of the 'bionic ear' developed by Cochlear. When the bionic ear was developed it was 'the company' and it represented a completely new solution to some hearing problems. An equally radical innovation but one of smaller impact on the innovator was the New South Wales Roads and Traffic Authority's development of a road traffic controller. The road traffic controller was developed to deal with the difficulties of controlling traffic on Sydney roads and is similar to the Scoot system developed by the City of London. Airbags represent a case of low impact on the company but moderate newness to the customer.

This discussion highlights the complexity found in simply defining what we mean when we use the term innovation. Understanding the role of innovation and developing a corporate strategy that includes an innovation component requires the manager to choose the most appropriate definition of innovation for his/her firm. The discussion below attempts to aid the manager in this task by dissecting the characteristics of innovation, the characteristics of innovating firms and what those firms gain from innovation.

Figure 5.2: **Innovation based on value to the company and newness to the customer**

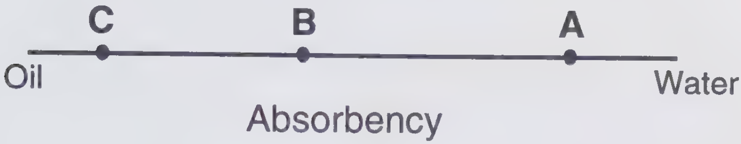


Product innovation

As noted in chapter 4, we can view an individual product or service as being valued by users because of the combination of attributes or characteristics embodied in it. For example, we may think of detergents as being defined around a specific set of attributes: their washing power (especially to remove oil), bleach content, perfume, required washing temperature and so forth. Every brand of detergent embodies a different combination and, hence, offers a different bundle of attributes to the customer. Consumers naturally attempt to find those products that most satisfy their needs and will disproportionately purchase those products closer to their 'ideal' combination of attributes.

Using this definition of a product, we can describe a product as new if it either combines known attributes in a new combination or introduces new attributes that were not previously available. The former is often called product differentiation or segmentation and is given full treatment in chapter 7. The latter is usually a more substantive innovation since it implies a fundamental redefinition of the product.[6] The degree of innovativeness of the new product or service can be thought of as being directly related to the distance between the old and new products. For example, both Tab (Coca-Cola's first diet soft drink)

Figure 5.3: Paper towel products based on absorbency



and Seven Up would be viewed as substantive innovations since they redefined the product category by adding new attributes—low calories in the case of Tab and decaffeination in the case of Seven Up. Caffeine-Free Diet Coke would not, however, be viewed as a substantive innovation but as a case of simple product differentiation (albeit a successful one) since it combined known attributes—sugar free, no caffeine, and the Coke name.

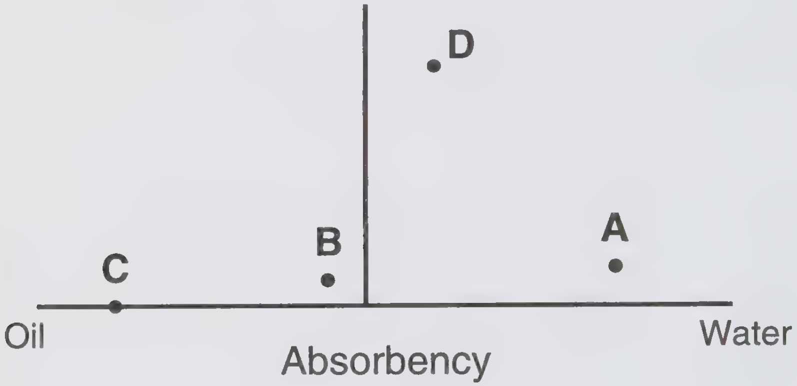
To develop this approach further, let us go back in time and visualise a major innovation in a common household product, the paper towel in the kitchen. We will simplify the actual history to sharpen the ideas we are developing. When paper towels were first introduced, the principal distinction was their fibre composition, reflecting the actual wood species used. This influenced the absorbency of the paper: some towels were better at soaking up kitchen oil and grease, while others were more effective with water spills. All the consumers who bought paper towels were interested in this single dominant attribute—preferring the brand that 'worked' best for them. So, in this early phase, we can portray consumers as spread along a continuum with several brands of towel (A, B and C) which varied in their absorbency (see figure 5.3).

Through experience, each consumer learns their own needs and has an 'ideal point'; that is, a particular location on the product spectrum reflects their true preferences. Since it is impossible to produce an infinite variety of towels economically, the consumer tends to purchase the brand which is the closest to their own ideal point. However, some consumers may see all existing products as too 'distant' and rely on the kitchen sponge or some other way to mop up.[7]

Suppose that an innovator (company D) develops a paper towel with a new attribute, decoration. We could break this into several attributes—colour, surface embossing and printed design—but (again for simplicity) let us call this a single attribute. The decorative towel requires a significant investment in paper machine technology (embossing rolls) and in the towel factory (printing). The whole attribute space for paper towels now becomes two dimensional—decorativeness by absorbency (see figure 5.4).

The success of this innovation depends, of course, on whether there is a latent interest in brightening up the kitchen. If consumers saw such embellishments as unnecessary (or perhaps environmentally unsuitable), the

Figure 5.4: **Paper towel products based on absorbency and decorativeness**



new product would fail. For this example, however, we assume that the new product is offered at the same price as the old brands and does appeal to some consumers. This appeal may be immediate ('just what I have always wanted') or develop as a preference over time. In either case, consumers will realign their purchases—again choosing the brand closest to their now revised ideal point.

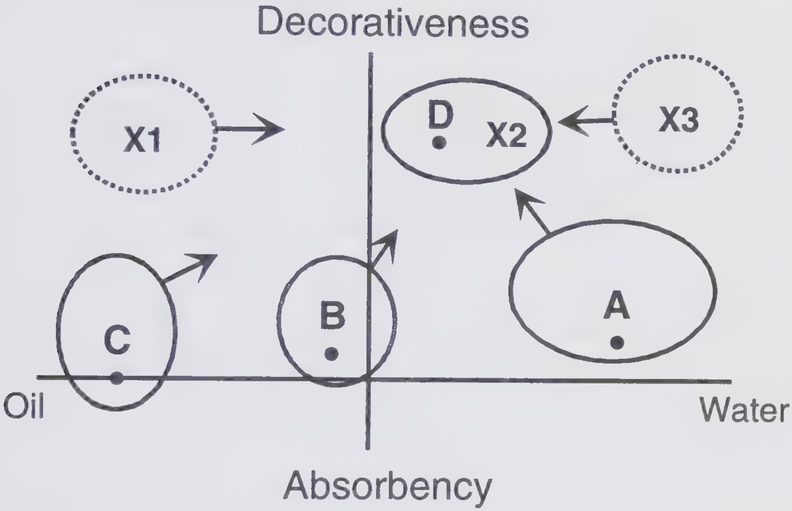
Figure 5.5 shows the structure of the market for paper towels some time after the new brand D has been introduced. The circles, by their size, represent the clustering of consumers in particular parts of attribute space. The two dotted circles represent clusters whose real preferences are not yet well met by any brand. Note that we are assuming D is only offered with one absorbency variation. This might reflect difficulties in embossing or printing papers with other fibre mixes, or a cautious initial approach to marketing.

The arrows on the diagram suggest the 'pull' that D exerts on consumers, not only in the nearer clusters, but also in the more distant clusters. In some sense, the perceptual map is like a gravity diagram. The weight and unique characteristic of D (its decorativeness) exert a pull on all the other consumer clusters. Those purchasing products A, B and C now demand more decorative features than before the introduction of product D. However, some potential consumers in the two poorly-served clusters (X1 and X3) still see all four brands as too 'distant' and purchase other products (sponges, etc.) instead.

The success of the new paper towel will depend on a number of factors:

- meeting the needs of a major latent cluster (X2);

Figure 5.5: **Paper towel products and customer groups based on absorbency and decorativeness**



- drawing some customers from previously unserved clusters (X1 and X3) into the market; and
- attracting some buyers away from the established brands; for example, some consumers who bought brand A may trade off lower absorbency for the appeal of decoration.

This particular example suggests that, even in product categories that appear very mature, a real innovation based on a new attribute may not only attract current customers (brand switching) but actually expand the total market size, effectively by substitution for other goods (such as sponges) that are not shown in our attribute space diagram. We can think of entire markets redefined by simple expansion of their product spaces—mobility in the case of telephones, portability and miniaturisation in the case of consumer electronics and object-oriented programming in the case of Apple/Xerox.

Process innovation

Process innovation represents a new or improved way of producing or providing a product or service. Process innovation can be something as simple as the improvement in the way in which a bolt is tightened or something as radical as the development of an entire just-in-time inventory system. Unlike the case of a product innovation, we do not have a clear-cut way of thinking about how radical a process innovation is. However, we do have a more direct measure of the impact of the innovation and that is the improved productivity and profitability of the company implementing the innovation.

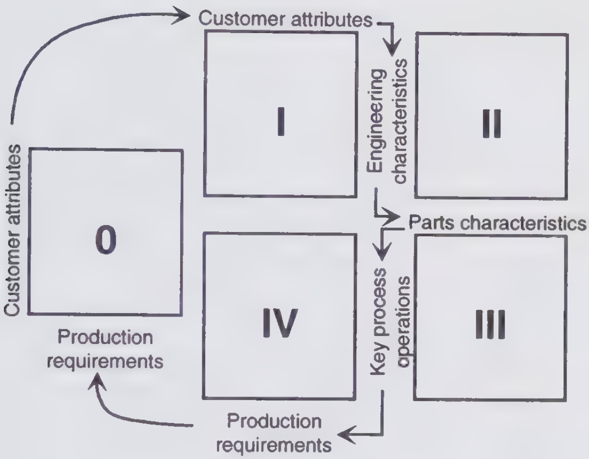
Process innovation is the unsung hero of corporate development. It can at the very simplest allow a company to achieve greater profitability from the sale of an identical product that is now produced at lower cost. However, process improvements more normally allow companies to sell new and improved products and expand the possible combinations of product offerings available to consumers (typically at lower prices as well). Take our paper towel example once again. It was the discovery of a process improvement that allowed the development of a product attribute that had not existed before. At this level, we can see how process improvements lead to expansions of the defined product space. An excellent example of this is the improvements in automotive technology over the years. Although motor cars are significantly more expensive in real terms today than they were in the 1950s and 1960s, the quality and attribute offerings are so much greater that the real quality adjusted prices of cars are significantly lower today than in the past.[8] Griliches estimated that, from the 1930s through the 1960s, as much as three quarters of the changes in the prices of motor cars was driven by quality changes implying that the real quality adjusted price of automobiles actually fell!

Companies today have become more cognisant of the linkage between process technology and product development and have developed techniques aimed at exploiting the two together. Perhaps the most systematic technique for exploiting the interrelationship between process technology and product development is the technique of Quality Function Deployment or QFD. QFD is discussed in Case 5.1 as it applies to the automobile industry. At its very basic, QFD attempts to define consumer attributes in terms of engineering and production characteristics allowing the company to quantify abstract consumer wants in terms of controllable production characteristics. At the heart of QFD is the implication that process and product innovation cannot be separated since one invariably has direct and substantive effects on the other.

Case 5.1 QFD—developing process and product innovation

QFD is a technique developed to link abstract consumer attributes to observable manufacturing characteristics. The following diagram shows an example of a four-stage QFD path that links customer attributes to final production requirements in the case of a manufactured product such as an automobile. The key to QFD is engineering for customer satisfaction. Only those aspects of the

The QFD process


Customer attributes
Engineering characteristics
Parts characteristics
Key process operations
Production requirements
Customer attributes
Production requirements
0
I
II
III
IV

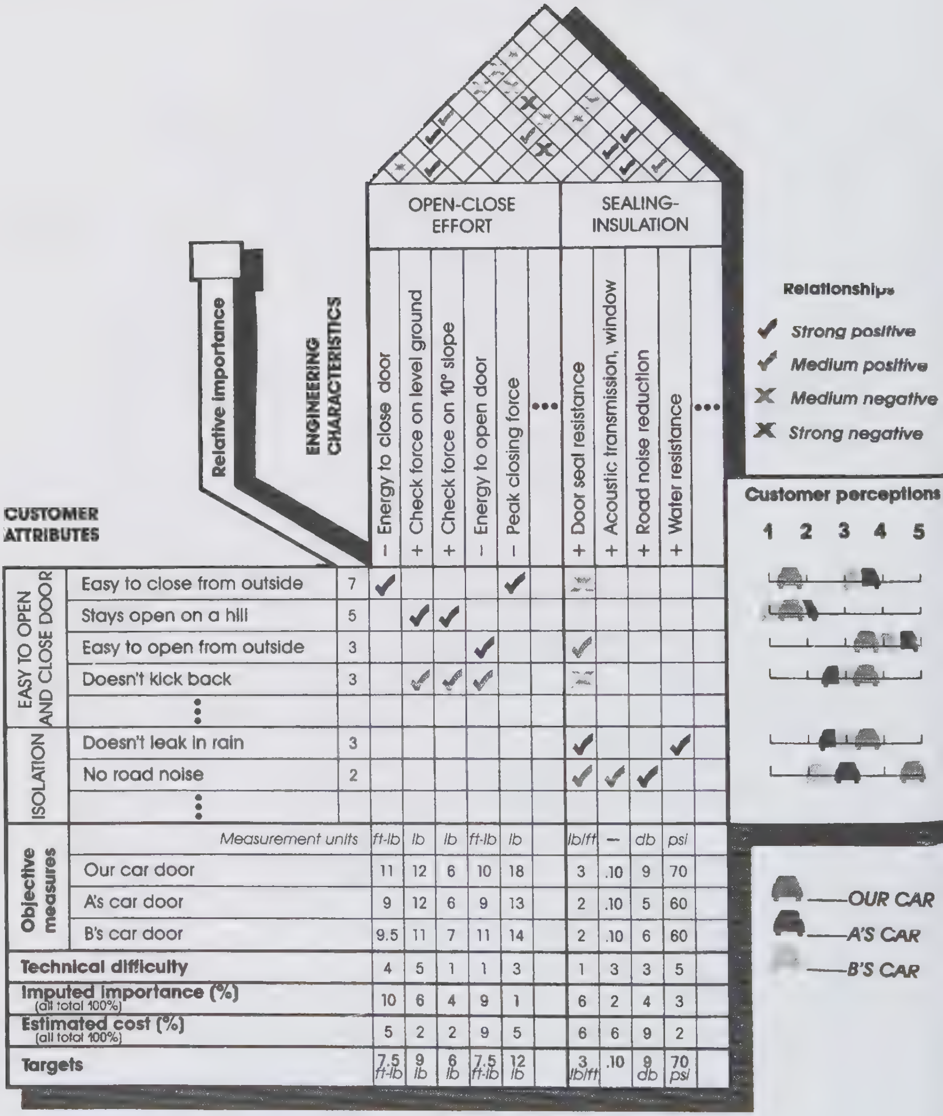
product that are directly related to an observable consumer demand are engineered. In the diagram, we are concerned with the linkage between the customer's demanded attributes and the production requirements (0), however, this link is not direct. To get to this final stage, we need to recognise and account for the iteration of four preceding stages: customer attributes engineering characteristics (I); engineering characteristics parts characteristics (II); parts characteristics key process operations (III); and key process operations production requirements (IV).

Although the stages labelled II, III, and IV may differ from application to application (and additional stages may be added), it is generally found that stages 0 and I exist in each application of QFD and we will focus on these in our example. Each of the stages entails asking a series of questions. Stage I, sometimes referred to as the 'house of quality', begins by eliciting consumer attributes through a series of questions such as:

- What do customers want?
- Are all the preferences equally important?
- Will delivering perceived needs yield a competitive advantage?
- How can the product be changed?
- How much does engineering influence the customer-perceived quality?
- How does one engineering change affect other characteristics?

These questions are aimed at zeroing in on the relationship between customer attributes and engineering characteristics. The reader should recognise the similarity between the QFD approach and our definition of strategy as the

House of quality


Relationships
✔ Strong positive
✓ Medium positive
✗ Medium negative
✖ Strong negative
Customer perceptions
1 2 3 4 5
OUR CAR
A'S CAR
B'S CAR

CUSTOMER ATTRIBUTES		Relative importance	ENGINEERING CHARACTERISTICS: OPEN-CLOSE EFFORT						SEALING-INSULATION				
			− Energy to close door	+ Check force on level ground	+ Check force on 10° slope	− Energy to open door	− Peak closing force	•••	+ Door seal resistance	+ Acoustic transmission, window	+ Road noise reduction	+ Water resistance	•••
EASY TO OPEN AND CLOSE DOOR	Easy to close from outside	7	✔				✔		✗				
	Stays open on a hill	5		✔	✔								
	Easy to open from outside	3				✔			✓				
	Doesn't kick back	3		✓	✓	✓			✗				
	⋮												
ISOLATION	Doesn't leak in rain	3							✔			✔	
	No road noise	2							✓	✓	✔		
	⋮												
Objective measures	*Measurement units*		*ft-lb*	*lb*	*lb*	*ft-lb*	*lb*		*lb/ft*	—	*db*	*psi*	
	Our car door		11	12	6	10	18		3	.10	9	70	
	A's car door		9	12	6	9	13		2	.10	5	60	
	B's car door		9.5	11	7	11	14		2	.10	6	60	
Technical difficulty			4	5	1	1	3		1	3	3	5	
Imputed importance (%) (all total 100%)			10	6	4	9	1		6	2	4	3	
Estimated cost (%) (all total 100%)			5	2	2	9	5		6	6	9	2	
Targets			7.5 *ft-lb*	9 *lb*	6 *lb*	7.5 *ft-lb*	12 *lb*		3 *lb/ft*	.10	9 *db*	70 *psi*	

Source: J. Hauser and T. Clausing, 'The house of quality', *Harvard Business Review*, May/June 1988.

matching of resources to customer value and our operationalisation of the value chain.

Think for a moment how this might be applied to the development of a motor car and, in particular, the car door. Consumers may have attribute preferences that can be clustered into primary and secondary groups and weighted according to their importance. If competing products exist, relative evaluations can be elicited from consumers. These attributes are related to a specific set of engineering characteristics in either a positive or negative way and are objectively measured by the engineering staff. Finally, two additional analyses are conducted; one relating the engineering characteristics to one another (e.g., some characteristics may conflict with other requirements such as engine size and gas mileage) and the second setting the targets, costs and difficulty of achieving the goals.

Now look at the simplified but complete 'house of quality' diagram for the case of a car door. The simplicity of the graph disguises the difficulty of the task. However, the beauty of QFD is its ability to bring the 'voice of the consumer through to manufacturing'.

Examining the figure we see a number of areas where this technique shows its merit. First, the engineers view the car door as having two main characteristics, *Open-Close Effort* and *Sealing Insulation*, while the customer's values are *Easy to Open and Close Door* and *Isolation*. Although these characteristics appear similar (and they are), the actual attributes that make them up are different, with the customer not being concerned with items that can be easily measured. In addition, the engineer's attributes of a car door do not perfectly overlap with the customer's attributes of a car door.

Reading vertically at the bottom of the house of quality we find the engineering requirements of each of the engineer's attributes. Reading horizontally in the middle of the house we see the consumer's importance weights for each of their attributes and a relative measure of customer perceptions of competing motor cars. The roof of the house presents engineering conflicts. For example, *Peak Closing Force* is negatively related to *Door Seal Resistance*.

The house of quality provides management with the objective information with which to: (1) increase customers' perceptions of their product through (2) satisfying key customer demands by (3) paying attention to important engineering requirements. Note that in the car door example, the most important customer attribute is *Easy to Close From Outside* (7) and the least important customer attribute is *No Road Noise* (2). These two attributes are also the ones that distinguish Our Car from the competition (see Customer Perceptions). Unfortunately, Our Car is perceived as worst by a large margin on the most valued attribute and best by a large margin on the least important attribute! The house of quality not only reveals this but indicates which engineering attributes must be changed to improve our position.

Source: This example is developed from J. Hauser and T. Clausing, 'The house of quality', *Harvard Business Review*, May/June 1988.

What drives innovation?

In many ways the discussion to this point is nothing new. Managers, MBA students and even the former Prime Minister of Australia, Paul Keating, have all been indoctrinated about the supposed advantages of innovation (to the former, it will save their companies; to the latter, it will save his country). Boards are spending more time today discussing innovation than ever before.[9] So why aren't all companies successful at it? On one dimension, it can be argued that innovation is a gamble and there are simply winners and losers. Even in a very long game one would expect circumstances where there were long winning streaks. However, this metaphor does not make complete sense in all business contexts since companies purposely work to upset the odds they are facing. What we need to ask is, are there strategies that allow companies to continuously tilt the odds in their favour? To answer this question, we must get at what drives the innovation process. The academic evidence appears to indicate that four factors drive the innovative prowess of firms:

- The structure of the industry;
- The economic structure of the firm;
- The organisational structure of the firm;
- The historical development of the firm.

However, the evidence also shows that the overwhelming determinant of both invention and commercial innovation is sheer blind luck. The innovation process is a high risk, potentially high return endeavour that can be managed at the margin but cannot be rid of its fundamental uncertainty.

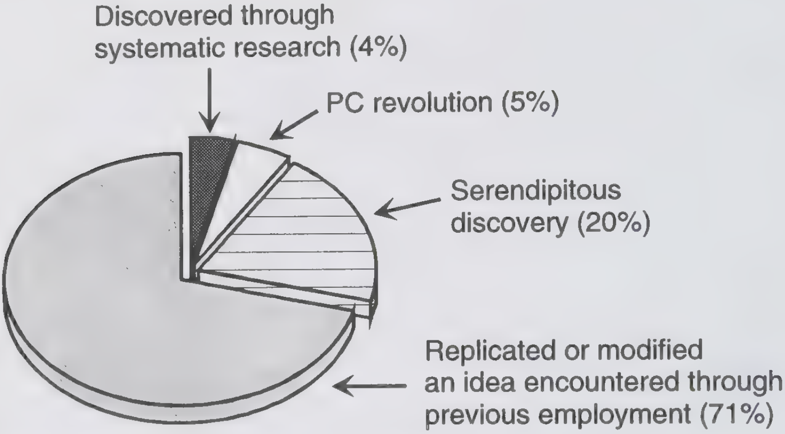
The firm does not operate in a vacuum and the structure of its industry is a major determinant of whether or not it innovates. Empirical evidence indicates that firms in industries where innovation is necessary do innovate, otherwise they do not survive. For example, if one were to examine firms in the scientific instruments and computer industries (our top two innovators in table 5.1), you would see that all the firms were attempting to innovate in one form or another. In other industries, the innovation potential is low and rivalry normally revolves around some other aspect of doing business. In addition, firms in more competitive industries (where competition is defined as an economist would define it—a large number of firms earning normal profits) also innovate more. When we bring this to the Australian context we find some interesting implications and perhaps some telling characteristics of Australia's innovation potential. Australia's export income is heavily skewed towards industries where innovation has historically been low world-wide (agriculture, mining, and food and materials processing). Additionally, the historically closed economy has had (and continues to have in many areas) entrenched and cosy oligopolies. To this extent, the government's concern about the weak innovative character of Australian industry is misplaced since it fails to recognise the constraints under which Australian industry is operating. Before Australia can increase its level of innovation it must develop more indigenous firms in innovative industries, itself not a simple or even clear-cut task.[10]

Of the economic structure of the firm, there appear to be two main drivers of innovation. The first is size. Every study has shown that there are large economies of scale associated with R&D and product development expenditures. For example, analyses in the US have shown that public innovating firms are twice the size of public non-innovating firms in the same industry.[11] This appears to arise because larger firms are able to make a mix of innovation bets assuring themselves of some successes even in an environment that is hostile to the success of innovations. McKinsey finds that successful innovative companies are more likely to source ideas from numerous places and engage in overlapping projects.

The second aspect of internal economic structure is based on the Teece/Itami[12] view of the firm as a producer of information or intangible know-how. Using their idea of the firm as developing intangible and non-tradable assets or capabilities as part of its day-to-day activities, we have something of an explanation of what may foster internally developed innovation. Firms with a mixture of complementary assets can spread these assets over a number of potential products. This is also empirically supported. Not only do innovating firms invest more than their rivals in R&D (R&D/Turnover: innovators = 7.59%; non-innovators = 2.96%) but also invest more in advertising (Advertising/Turnover: innovators = 3.12%; non-innovators = 1.67%).[7] Because of their ability to capitalise on complementary assets, we find that focused but larger and more horizontally and vertically integrated firms are better innovators than single-product firms.

This last point may appear to be at odds with the popular viewpoint of small focused firms as the 'engines of growth' but the evidence is overwhelming that this conventional viewpoint is generally incorrect. In those cases where small firms do a disproportionate amount of innovation, two factors appear to be at play. First, smaller firms are more effective at taking advantage of the external effects of R&D conducted at large firms and universities. This intellectual free-ride allows them to compensate for their lack of scale in R&D investment. In the US, almost all the pioneering biotechnology companies and many fledgling computer companies got their start as spin-offs from university research. For example, Silicon Graphics is the brainchild of James Clark, a former Stanford University professor. Also, a large majority of small software, medical technology and other high tech companies grew from entrepreneurial employees taking knowledge, expertise, colleagues and clients from their previous employers (see figure 5.6).[13] Classic examples of this include the development of Sperry Rand's

Figure 5.6: The source of small firm innovation



Source: A. Bhide, 'How entrepeneurs craft strategies that work', *Harvard Business Review*, 94 March/April, 1994, 150–61.

UNIVAC division by two MIT scientists (the Eckert-Mauchly Computer Corporation), Amdahl's outgrowth as a mainframe cloner from IBM, and Oracle's development as a multimedia software giant driven by Larry Ellison, a former Amdahl executive. The second driver of small firm innovation is the lack of a necessity for complementary assets. In the cases where small firms do innovate, they do so successfully in a world where: (1) they can sell (or lease) their innovation to a company possessing the complementary assets to exploit successfully the product's potential; or, (2) the complementary assets are less valuable or can be bought on the open market. For example, products that can be sold by distributors are more likely to be successfully developed by small firms than products that require specialised in-house sales forces. Microsoft, in its early life as a small innovator, gained significantly from its linkage with IBM and the fact that manufacturers, wholesalers and retailers effectively handled Microsoft's distribution and marketing. These sources gave Microsoft the complementary assets it so desperately needed as a developing company.

The third driver of innovation is the internal structure of the firm. Successful innovation arises from an organisational structure built to generate information and capitalise it into marketable products. McKinsey & Co. have provided a nice survey and synthesis of the structural characteristics of good innovators in a 1993 report.[14] Although their study contains many tautological results (successful innovators do things well while unsuccessful firms do not!), it does provide some applied insight about the internal organisational characteristics of innovating firms. They find that the most successful innovators are likely to be structured in a manner that allows them to:

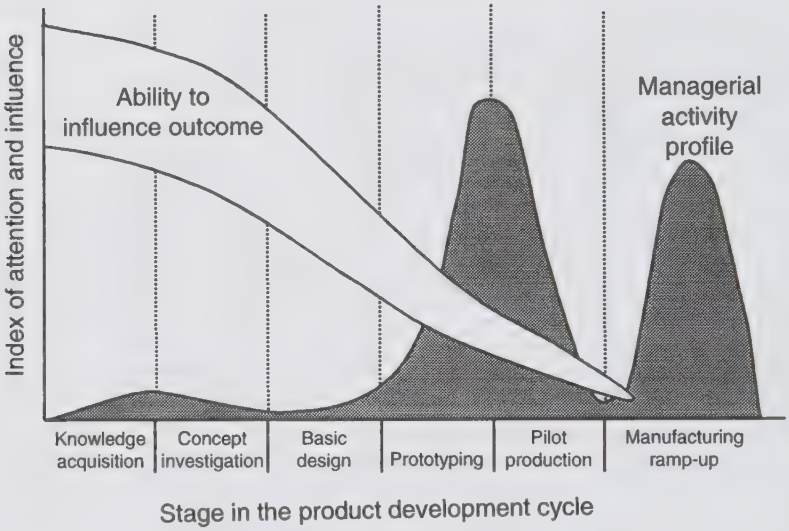
- link innovation strategy with business unit strategy;
- remain close to the customer to understand customer needs;
- use senior managers as product champions;
- put their best staff on new product projects;
- have systems in place for learning from the past.

In addition, more innovative companies utilise a great deal of organisational flexibility. They tend to rely on informal management processes to drive their functional integration and push R&D down to the divisional level. They also rely heavily on monetary and other incentives, rather than rules, to guide management behaviour. The innovative firm is structured in a way that takes insight, develops that insight into an idea, and executes the development of that idea into a commercially viable product or service.

This story is consistent with current moves towards cross-functional teams as the model of choice for large scale development efforts and a general attempt to integrate customer 'listening systems' into the day-to-day operations of the corporation. However, much of the empirical evidence appears to indicate that firms are less than committed to, or successful with, their integration of innovation strategy with corporate strategy. Clark, Wheelwright and Hayes[15] provide an interesting schematic that highlights the relationship between the role of management and its influence on the new product development process and points out why so many new product projects fail to meet expectations (see figure 5.7). When new product projects are most subject to influence, top management gives them little attention, yet when top management become more involved in the project, the time when they can have substantive effect has long past! Page[16] finds that while 76 per cent of companies use interdisciplinary teams, less than half actually encourage product champions and only 16 per cent link bonuses to the achievement of target project performance, such as on-time completion. What is perhaps most disheartening is that even among best practice firms, fully 33 per cent had neither a new product strategy nor a formal new product development process.

The fourth driver of innovation is the historical development of the firm. Like any other entity, firms learn to adapt to their environment. This was the basis of Henderson's conjecture that companies succeeded through developing unique niches.[17] Over time, firms find that areas in which they have developed distinctive competencies can provide them with opportunities for expansion into new markets. The Japanese developed technologies associated with the building of small cars that proved to be a real strategic advantage when the OPEC oil crisis

Figure 5.7: Managerial influence and managerial attention in the innovation process



Source: K. Clark, S. Wheelright and R. Hayes, *Dynamic Manufacturing: Creating the Learning Organisation*, New York: Free Press, 1988.

hit the developed Western world in the 1970s. Yet, in spite of this advantage, it took the Japanese auto makers more than 20 years to develop large model cars that could successfully compete with those produced by American and European manufacturers. Australian mining companies have taken their distinctive expertise in extraction technology and used it all over the world. Australian solar energy technologies are also recognised as some of the best in the world. American technology companies built entire industries around technology-related defence developments that were aimed at compensating for America's inferiority in numbers of conventional forces vis-a-vis the Soviet Union. The list could go on. The role of a company's historical development is outlined in Case 5.2 about IBM and its product development history.

Case 5.2 The historical development of IBM

In 1993, IBM posted a record loss of $US5 billion, leading to the resignation of its Chairman, John Akers. The news was particularly alarming, since IBM had long stood as a model of a prescient, audacious and successful business. But the policies that had brought its early successes were increasingly inadequate as the world of computers changed beyond recognition. IBM's past successes were increasingly undermining its future prospects, for its historic growth had left it too cumbersome to change direction quickly.

IBM's initial success in computers was all the more remarkable, because at the end of World War II, the company had no background in electronics. Its main business was in accounting machines that worked with punch cards, where IBM held 90 per cent of the market. The company did, however, have a very strong record in customer service. Machines were leased to customers along with service agreements and IBM sales representatives went to great lengths to help customers apply the machines to their particular business needs. The rental policy meant that IBM could generate strong cash flow, even if it took on no new customers, so long as it held the loyalty of the existing ones.

During the immediate post-war years, there was no guarantee that IBM would even enter the computer field, much less become the industry leader. Fortunately, IBM's executives saw the promise of electronics at an early date and made timely moves in this direction. IBM's CEO, Thomas J Watson Sr became convinced that IBM was not doing enough in electronics. Watson was impressed with the ability of electronic circuits to carry out arithmetical functions beyond the scope of the firm's existing products. IBM began producing calculating machines that were an immediate success in the marketplace.

By 1948, IBM had an experimental computer that worked with 12,500 vacuum tubes and 21,400 electromechanical relays. IBM was then approached to buy out the company that had invented the UNIVAC, only to be told by its lawyers that the purchase would violate anti-trust laws. The purchase was made instead by Remington Rand, which was to become an early and successful competitor of IBM.

But IBM was ready to trump the competition with its emphasis on service. IBM put a great deal of effort into developing and marketing its new computers to meet the specific needs of its customers. Thomas Watson Jr pursued this effort and guided the company into the computer era. He later wrote that: 'Around 1955, "computer" became a magic word. Top executives rightly believed that the companies of the future were going to be computer run. Board chairmen would say, "We've got to get a computer!" We thought that if we didn't grab the business, someone else would, and that we would never have this kind of opportunity again. So we decided to push the company as rapidly as the market would permit.'

Once the commitment was made, IBM pulled out all the stops. Salespeople had to spend fifteen months in classrooms, shops and in the field before they could win the right to handle an account. Each of them then had access to a staff of 130 mathematicians, physicists and engineers who could work with customers on programming problems. For every salesperson, there were three 'customer engineers' to keep service up to scratch.

Although Remington Rand had a long lead in computer technology, it could not compete with IBM's customer service. In the words of one IBM vice-president, 'We don't sell a product. We sell solutions to problems.' IBM came to dominate the market, with competitors confined to market niches. Serious competition did not come until late 1963, when Honeywell introduced its H-200, which was faster and less costly than IBM's then popular 1401.

IBM responded in April 1964 with what Watson called 'the most important product announcement in company history'. IBM announced six new computers and 40 peripherals. The new machines were to be highly compatible and with interchangeable memories, offering a total of nineteen different combinations of processor and storage. This put enormous pressure on IBM to deliver the promised products. If the firm did not deliver, it would quickly find its revenues squeezed between the unavailability of the new machines and declining demand for its previous product line.

The product's operating system, OS/360 was one of the most complex software projects ever attempted. The project suffered considerable delays and enormous costs. IBM had broken a cardinal rule—putting a delivery date on a product that had not yet been invented. Despite the delays, the product was an enormous success. Between 1964 and 1967, the company mounted the biggest corporate expansion in history. At a cost of $4.5 billion raised entirely within the private sector, IBM built five new production plants and filled them with equipment. It hired 60,000 new people, expanding its payroll by nearly 50 per cent. The entire effort was bigger and more costly than the Manhattan Project that developed the first atomic bomb.

IBM's gross income increased from $3.6 billion in 1966 to $8.3 billion in 1971, when after-tax profits topped $1 billion. In thirteen years, in 1984, net earnings reached $6.6 billion on revenue of $46 billion. This profit was larger than the total sales of IBM's nearest competitor, Digital Equipment Corporation.

However, by the late 1980s, demand for mainframes began to slump. Buyers were turning increasingly to desktop computers and workstations, linking them in decentralised networks. Even in the market for mainframes, IBM was facing increasingly strong competition from the Japanese. IBM's share of the world computer market fell from 36 per cent to 23 per cent during the 1980s, then slumped to 19 per cent in 1991.

In 1981, IBM made its bid to dominate the personal computer market, with the launch of its PC, which quickly emerged as an industry standard. By 1983, IBM had 46 per cent of the market for personal computers. In designing the PC, IBM deliberately broke with past practice. Until then it had built its systems using proprietary software and company-manufactured chips. But by 1981, customers were demanding open architecture, which allowed other companies to offer compatible peripherals and programs. IBM responded by buying chips from Intel and the PC's operating system from Microsoft.

IBM realised that open architecture would open the door to competitors who could build low cost compatibles soon to become known as clones. But they hoped to avoid this by offering a steady stream of price cuts and product improvements. As it turned out, that strategy was fatally inadequate. Competitors quickly found that they could redesign the basic PC with fewer parts, using less expensive chips and disk drives and sell the IBM-clones for as little as one-fourth of IBM's price. IBM could have responded with predatory price cuts, but had only just emerged from an anti-trust case in which the US Justice Department had tried to break up the company. IBM sought to compete with the clones, but with limited success. In 1991, IBM's share of the personal computer market was down to 16 per cent and falling.

The company also suffered from massive over-staffing, the result of earlier expansion and a longstanding policy of zero layoffs. The only way to reduce these staff numbers was through attrition and early retirement. IBM did not abandon its no layoff policy until early 1993, when it posted its record loss of $5 billion.

Did this mean that IBM had forgotten the policies that had brought it success? To the contrary, it meant that IBM had failed to anticipate and cope with their unintended consequences. Its early computers had been brilliant triumphs, but they locked the company into the role of a builder of mainframes and perpetuated excessive staffing.

Even when IBM introduced the PC, it found itself in a vastly different world. Its early experience with business machines had left it primed for success with mainframe computers, but these in turn left the firm ill-suited to succeed in a market that now puts a premium on being inexpensive and nimble. IBM today finds itself caught in a trap, one shaped by its previous triumphs. It has yet to find the exit.

Source: Adapted from T. Heppenheimer, 'How IBM did it', *Audacity*, Winter 1994.

At the heart of the company's historical development is its core competencies and capabilities. A company's *core competencies* are the combinations of technologies and production skills that underlie its products and services. Core competencies are built up through the cumulative historical choices the company has made with respect to technology and products and are heavily influenced by its competitive environment. Hamel and Prahalad[18] point out that Sony's core competence is in miniaturisation while Canon's lies in optics and microprocessor controls. Sony is able to use its competencies in everything from televisions and VCRs to computers. Canon developed and uses its competencies in the areas of copiers, printers and cameras. A company's *core capabilities* are more ephemeral and represent those management processes and ways of competing that define the company.[19] Like competencies, capabilities reflect the historic development of the company but go further at defining what the company is since they are built more directly on the corporation's culture and its leadership. Because competencies and capabilities define the soul of a company, they are difficult to acquire except through historic development and actively engaging oneself in direct market competition.

Competence enhancing and competence destroying innovation

The impact of competencies and capabilities as it relates to innovation is best exemplified by the notion of competence-enhancing and competence-destroying innovation. *Competence-enhancing* innovation is innovation that builds on the underlying strengths of existing competitors and therefore serves to preclude the entry of new firms into the industry. *Competence-destroying* innovation is innovative change that replaces an existing competency. Such innovation opens a door for new rivals by upsetting the natural barrier that existing competencies and capabilities creates. Table 5.2 shows a number of examples of the two types of innovation.[20]

It is often assumed that an economy based on free enterprise will naturally be innovative. This is clearly the analogy that pundits draw when making comparisons between Western economies, particularly the United States, and less free countries, such as the former Soviet Union. However, as Hobsbawm aptly states, 'this is not so. [Economies based on free enterprise have] only a bias towards profit'.[21] Baumol notes that although the relationship between free enterprise and innovation does exist, one has to be careful about what type of innovation arises from such a system at any point in time. Competence-enhancing and competence-destroying innovation, as it is normally discussed, is viewed as a good thing—an innovation—while potentially destroying a competence of an existing company is normally thought of as increasing efficiency or customer welfare. Baumol[22] notes that entrepreneurship is not intrinsically good or bad. Just as entrepreneurs work to create efficiency they also work to destroy or redistribute value. For example, the legal profession has had many radical innovations that can be considered redistributive—one of the most recent being the 'poison pill' anti-takeover defences first developed by Wachtell & Lipton for Crown Zellerbach in 1984. The Crown Zellerbach pill was known as a 'flip-over' and gave shareholders of the acquired firm the right to purchase shares of stock in the new combined firm at a steep discount (in this case 50 per cent). This innovation, primarily aimed at protecting entrenched management, dramatically increased the cost of taking over a firm with such protection. The US Securities and Exchange Commission has estimated the cost to American shareholders from such provisions to be around 1.7 per cent of the value of their equity holdings.[23]

What are the advantages of innovation?

There are two primary tangible gains to a strategy based on innovation. The first is the ability to define the structure of the market and present competitors with

Table 5.2: **Competence-enhancing and competence-destroying innovation**

Competence-destroying innovation

Product innovation

Major product improvements	Incremental product improvements	Dominant designs
Jet -> Turbofan	DEC PDP-11	VHS technology
Mechanical -> Electronic typewriters		IBM JCL
Thin-walled iron cylinder engine		NC machine tools

Process innovation

Major process improvements	Incremental process improvements
Edison kiln (Cement)	Learning by doing
Gob feeder (Glass containers)	
Catalytic cracking -> catalytic reforming	

Competence-enhancing innovation

Product innovation

New product class	Product substitution
Airlines	Vacuum tubes -> Transistors
Cement	Steam -> Diesel locomotives
Plain-paper copying	Discrete -> Integrated circuits
	Records -> CDs

Process innovation

Process substitution
Natural -> Industrial gems
Vertical -> Rotary kiln
Thermal -> Catalytic cracking
Continuous grinding -> Float glass

Source: M. Tushman and P. Anderson, 'Technological discontinuities and organisational environments', *Administrative Science Quarterly*, 31, 439–65.

tangible barriers to entry or expansion. This is embodied in our discussion in chapter 4 on first-mover advantages. The second advantage is the ability to enjoy supernormal profits either because of intrinsic cost and pricing advantages or because of the limited effective competition that might exist as the market develops. We discuss each in detail below.

First-mover advantages

In general, successful early entrants into a market create advantages for themselves to the degree that they can take advantage of natural rigidities that exist in most markets. The success of the first mover is generally found to be in direct proportion to the unwillingness of customers to change their preferences and habits. In other words, the lower the perceived costs to customers of switching between suppliers, the lower the likelihood that an early entrant can sustain a true competitive advantage through the sheer fact of having entered the market during its infancy.

The prime mover's first potential advantage is in having a major role in *shaping consumer preferences*. A successful new product must meet a latent need on the part of the users; but the first product on the market can actually crystallise consumers' ideas and tastes. The introduction of Coca-Cola did not necessarily 'hit' a huge cluster with its ideal point of attributes already well developed; it helped create consumer tastes as to how sweet, dark and caffeinated a cola beverage should be. The role of the prime mover in actually shaping user preferences has been elegantly demonstrated in the research by Carpenter and Nakamoto described in chapter 4. Early entrants play an enormous role in defining what the product 'should be' thereby forcing later entrants to define themselves around this norm, what might be called a 'psychological standard'. The rigidity of such market preferences and how they can be passed on from generation to generation is exemplified by the amusing case below.

Case 5.3 Great Australian bite

New South Welshmen and Queenslanders are fond of Honey Jumbles and Iced Vos Vos, Victorians and Tasmanians prefer plain and chocolate Teddy Bears, and Western Australians salivate over Counters and Hydro Creams. Such are the vagaries of Australian biscuit consumption, according to Peter Jones, of Arnott's, which celebrates its 125th anniversary this year. Each state has its particular favourite, he says. Most popular among South Australians are Iced Vo Vos, which are indigenous to the state, as is the Chocolate Ripple in Victoria and Tasmania; the Gingernut in Western Australia; the Tiffany in New South Wales; the Malto Milk in Queensland; and Bush in the Northern Territory. A different Family Assorted is sold in each of the five major states to incorporate some of these local favourites. Jones attributes the regional favouritism to the fact that Arnott's is an amalgam of several family businesses in different states, each of which produced distinctive biscuits locals grew to love. In the past, the company has attempted to wean other Australians on to the various regional favourites to no avail.

Source: Anthony Dennis in the *Good Weekend* magazine of the *Sydney Morning Herald*, 1993.

The second advantage for the pioneer arises from the *switching costs* associated with user learning or other forms of co-investment. Many new products require an additional investment by the user. This investment could take the form of learning when and how to use the product most effectively or it could be the physical investment in other goods and services necessary to take full advantage of the new product. In some cases, this investment is so significant that the user has no incentive to try other competing products because they would require further investment in search and actual use. If, for example, you first used MS Word as a word processing package on a PC, you will probably persist with that even when newer more sophisticated packages become available. The choice of a Macintosh machine generally precluded investment in the alternative DOS-based technology. In many other cases, the learning or co-investment is less easy to pinpoint, e.g., the satisfaction of using a particular brand of soap or beer. Nonetheless, the consumer perceives that switching to a new product requires investment and that the potential benefit does not outweigh the cost.[24]

The importance of customer switching costs can be seen in the results of a study by Robinson and Fornell.[25] It analysed a sample of consumer goods by breaking it into those products where the typical purchase amount was less than $10 and those where it was $10 or greater. We would expect consumers to be more willing to search out and try competing products as the significance of a purchase increases: this will tend to reduce either the price premium that the pioneer can charge or the market share advantage or both. The evidence confirms that pioneers do indeed enjoy the greatest advantage when the product is inexpensive; the routine purchase that we make without bothering to reflect since the cost of a mistake is so low.

A third major source of advantage for the prime mover arises from *network effects*. For many products the choice made by one user (or set of users) spills over and begins to influence the choice made by other subsequent users. In particular, late adopters may be influenced by the knowledge of what is the leading product, even though this would not have been their own first choice. Computer standards are an excellent example of this. Cobol is a relatively inefficient and old computer language yet it persisted for decades due to the fact that most companies' accounting systems were Cobol-based. Universities would only teach Cobol classes to students contemplating work in the corporate world. Also, many computer operating systems mimic old IBM JCL commands not because they were terribly useful but simply because they were known by so many computer programmers when the alternative operating systems were being developed.[26]

As a result of these forces—preference formation, switching costs and network effects—early entrants throw obstacles in the path of any new entrant. We can see something of the nature of these obstacles by looking at a particular example given in Case 5.4.

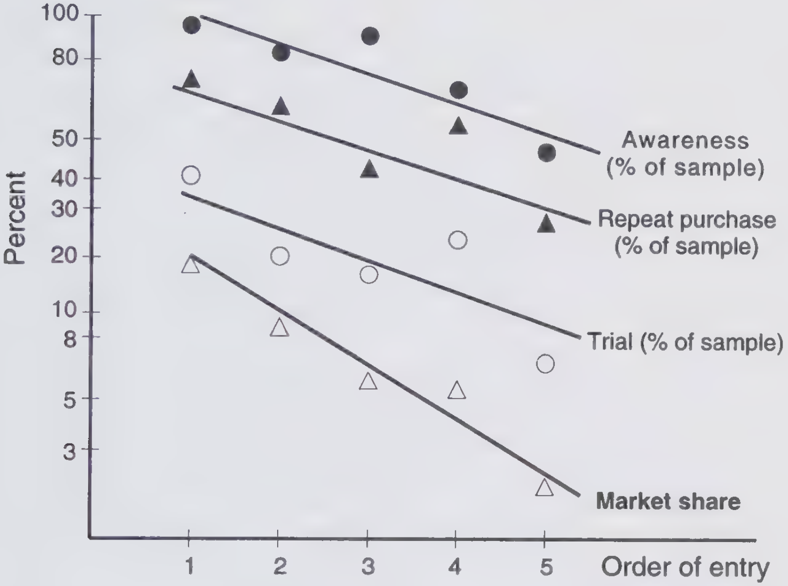
Case 5.4 Entry and trial in the face of first-mover advantages

The graph on the next page summarises some key features of the competition between five brands in a new segment of a packaged consumer food business. For ease of exposition let us consider it to be the introduction of muesli in the breakfast cereal market. The market shares of the five brands decline almost on a straight line according to their order of entry (this is similar to the findings of Urban, et al). Several of the forces at work can be inferred from the three other sets of data. Using the Awareness-Trial-Repeat (ATR) model of marketing, market share (MS) can be decomposed into three effects: the likelihood that consumers are aware of the product (A), the likelihood that they try the product given they are aware of it (T), and the likelihood that having tried the product they will repeat their purchase (R). Market share is then simply, MS = A*T*R.

In this case, the pioneer took consumers by surprise with an innovative product. Even in an age of television clutter and information overload, awareness of the first brand was very high. Moreover, the rate of trial was also high for such a mature category. Consumers were not only aware of the new product, but many actively tried it. Finally, the success of the brand was confirmed when the firm enjoyed a high rate of repeat purchase.

The second entrant into this category faced a different problem. Although the pioneer's success confirmed that there was a market demand (which reduces that element of risk for its competitors), the established brand of the pioneer is a competitive challenge. It is harder to create awareness of a second muesli. Even more important, it is difficult to generate trial. Some consumers were not particularly interested in muesli at all, or had tried the first brand and rejected it. Other consumers had become regular users of the pioneer brand and were satisfied with it; their preferences had become more sharply defined and more closely aligned with the pioneering brand's attributes. No matter which potential customer group we think about, they cannot be expected to experiment with a new muesli as readily as before. To generate both awareness and trial, the second entrant must differentiate the product in some way. But, in many product categories, the leader develops a product formulation that is inherently one of the lowest cost formulations for such products. Differentiation may then force later entrants to adopt higher cost formulations (for example, with more fruit or pine

Order of entry and market share, trial and repeat purchase



nuts) as their only means of survival.

As the figure shows, the later the entry, the more difficult these obstacles became. In a sense, the competitive environment changed for each entrant in turn and became increasingly hostile since the best niches were already occupied. Awareness, trial and the repeat purchase rate all declined. The inevitable result was lower and lower market share for each subsequent entrant.

As noted in chapter 4, caution needs to be exercised when discussing first-mover advantages. Perhaps a better term is early-mover advantages since Tellis and Golder, as well as others, seem to be developing results that indicate that the risks associated with being first are sufficient to make being early but not first a preferable position for established companies. Research by Robinson, Fornell and Sullivan[27] indicates that measures of company strength and complementary assets such as established brand names, marketing investment, potential shared production facilities, and financial skills are all associated with early-but-not-first entry. Market pioneering is a high-risk high-return gamble generally played and won by actors with more to gain than to lose.

Is innovation profitable?

The discussion of first-mover advantages has focused almost exclusively around the issue of market share gains. For example, the Urban, et al research discussed in chapter 4 showed quite dramatic market share gains for early entrants. However, this research is less convincing than it seems. First, since there is no available information on product profitability there is no indication that these market share gains translate into anything but normal profits for the industries being analysed. Second, this research suffers from serious survivorship bias;[28] since only the 'successful' firms remain in the sample being analysed it can be erroneously concluded that there is a first-mover effect when none exists. This was the point of the Tellis and Golder work discussed in chapter 4. All we can say, according to them, is that successful early entrants are successful! Hardly an enlightening point.

Although there is little information about the profitability of single innovations, there is a plethora of information regarding the profitability of innovators. Perhaps the most comprehensive analysis is that conducted by Chaney and Devinney.[29] They provide information on the market value and accounting profitability of innovating and non-innovating firms in the United States for the period 1975–1988 along with the stock market value of individual product introductions. They show that innovating firms were more profitable than non-innovating firms in the same industry by any reasonable accounting-based measure. The return on assets (ROA) for innovating firms averaged 4.37 per cent while that of non-innovating firms averaged only 2.81 per cent. The return on the market value of equity (ROE) showed an even stronger relationship with the innovators earning on average 14.06 per cent and the non-innovators only 6.62 per cent. The stock market value of a portfolio of innovating firms increased by a risk-adjusted 268 per cent during the 15-year period from 1974 to 1988 while a portfolio of non-innovating firms had a market value increase of only 204 per cent (approximately comparable to the S&P 500 index). In addition to proving that there are substantive gains to innovation in general, Devinney and Chaney also provide evidence on the stock market valuation of individual products. The industries with the largest valued innovations included (with the average new product's contribution to the firm's stock market value given in parentheses): computers (US$138 M), chemicals and pharmaceuticals (US$105 M), food (US$78 M) and photographic equipment (US$59 M). The industries with negligible valuation of their product innovations included textiles, business services, transportation and motion pictures. Overall, the average new product increased the value of the innovating firm by US$72 million.

The only study to investigate the linkage between innovation and profitability in Australia finds substantive differences in the performance of firms based on their innovativeness. This is true particularly for small and medium

Table 5.3: Turnover, profitability and firm size in Australia

Firm (employees)	Low innovativeness	High innovativeness
Small firms (< 20)		
Turnover growth	-2.7%	5.2%
Profit/Turnover growth	-1.7%	0.6%
Medium firms (20–99)		
Turnover growth	-1.4%	2.8%
Profit/Turnover growth	-0.1%	0.7%
Large firms (100+)		
Turnover growth	-3.0%	3.0%
Profit/Turnover growth	-0.4%	-0.4%

Source: Bureau of Industry Economics, Canberra.

enterprises.[30] When these results are examined sectorally, the industries with the greatest apparent relationship between innovation and performance were the low and medium technology manufacturing industries (see tables 5.3 and 5.4).

The follower's strategy

Given the evidence that substantial market share advantages do accrue to the prime mover and that innovative firms reap profitability gains, what can we say about the strategy that a second entrant or later competitor might follow?

The problems of the follower are quite nicely exemplified by the tribulations of Roger Beteille, the first president of Airbus.[31] Whenever Beteille would show novel ideas to airlines, such as new materials to save weight, the response would be the same: 'But Boeing doesn't do it that way. And there must be a reason'. Beteille would move on to stressing his two-engine design, explaining how it would allow greater efficiency. 'If it made sense,' the carriers said, 'Boeing would do it.' Well, said Beteille, instead of three crew members, Airbus planned to simplify the cockpit so two could fly the plane. 'If two crew members were safe,' came the response, 'Boeing would do it.' At that point, Beteille would stress that

Table 5.4: Turnover, profitability and industry type in Australia

Firm (Firms)	Low innovativeness	High innovativeness
Software (109)		
Turnover growth	0.4%	3.2%
Profit/Turnover growth	-2.4%	0.2%
High tech (108)		
Turnover growth	0.0%	0.6%
Profit/Turnover growth	-0.4%	0.4%
Medium tech (209)		
Turnover growth	-3.9%	5.7%
Profit/Turnover growth	-0.6%	1.1%
Low tech (122)		
Turnover growth	-4.4%	3.9%
Profit/Turnover growth	-0.3%	1.2%

Source: Bureau of Industry Economics, Canberra.

Airbus planned to put tips on the wing edges for better stabilisation. 'If tips were necessary, Boeing would do it.' None of that helped his confidence, but in each case he went with the new idea. If all he did was copy Boeing, he felt, carriers would have no reason to switch. Why buy a me-too product from an untested newcomer? At the same time, Beteille understood the importance of staying compatible with the giant. He made sure the plane's aisles would accommodate standard meal carts, and the freight-unloading system would mesh with Boeing's ground gear.

The ability to exploit the advantages enjoyed by the successful pioneer depend critically on three things: the rate of growth of the market, the repeat purchase rate, and the stability of the characteristics of the product space. It also reflects all three forces—the shaping of preferences, product-specific learning, and network effects—that we identified earlier. However, although these factors help explain how an earlier innovator can maintain its position, it needs to be recognised that the pioneer's advantage is driven first and foremost by the

Table 5.5: IBM's market entry strategy

Product category	First major entrant	IBM entry
Minicomputer	Digital PDP-8 (1965)	Series I (1976)
Personal computer	Apple II (1977)	PC (1981)
Engineering workstation	Apollo DN 100 (1981)	RT PC (1986)
Laptop (PC-compatible)	Toshiba T-100 (1986)	L40 (1991)
Risc workstation	Sun 4 (1987)	RS/6000 (1990)

Source: D. Kirkpatrick, 'Breaking up IBM', *Fortune,* 27 July 1992.

internal strength of the company itself. In the extreme case, the pioneer can become so entrenched that the name becomes generic: can you xerox a copy for me? In any case, the successful pioneer is generally only slowly unseated from its position of dominance.

By contrast, the pioneer who does not have sufficient time to establish trial and extensive market penetration is vulnerable to a competitor who has either a superior product and comparable resources, or a comparable product and superior resources. The early follower does need some advantage to compensate for its late start. In many cases, this advantage could well be an established reputation in a similar or related class of products or control of a powerful distribution channel. For example, Apple was very successful in establishing itself in the education and personal PC market. Although IBM was a late entrant with arguably a me-too product, it captured a very high share of the personal computer market in its core business customer base—where its reputation and established presence were critical. The IBM/Apple example also provides a classic illustration of the role of size in capitalising on an innovation. Apple simply did not have the scale of complementary assets (e.g., sales force and scope of service capabilities) to capture enough of the potential market quickly to preclude entry by other companies. IBM, on the other hand, was able to use its sales and distribution muscle to outsell Apple many times over in a very short period of time. Given it was facing a small rival, IBM had the luxury of waiting and watching the initial development of the market. In general, this has historically been IBM's new market entry strategy as table 5.4 quite clearly shows—watch the market, utilise complementary assets and do not take big risks. The efficacy of such a strategy is, of course, under considerable scrutiny!

In a comparable case, consider the Cash Management Trust introduced by Hill Samuel (now the Macquarie Bank) in the early 1980s. This captured a very large share early in the life of the product and remains the leading cash management trust where the purchasing decision is influenced by an independent financial advisor or broker. However, every major bank and insurance company has now introduced a comparable product as an extension of the range they offer their customers. The trusts offered by these institutions typically dwarf the total size of the Macquarie Bank Trust.

A critical feature, common to both examples, is that the innovation occurred in industries with many established incumbent firms. Although incumbents do not have the specific new product introduced by the pioneer, they have specialised complementary assets—supporting capabilities which are required to commercialise a new product successfully. The most common complementary assets include:

- sales force and distribution channels;
- after-sales service capabilities;
- regulatory approval know-how; and
- established brands and a reputation with users.

The battle for survival and market share is more complex when new entrants lack complementary assets which cannot be imitated easily. Recent research into industries marked by successive waves of innovation (e.g., diagnostic imaging equipment) suggests that we need to think of two clocks ticking away—one measuring the time and order of entry for newcomers, the other for incumbents with related products.[32]

A follower with comparable resources and an equivalent product must seek to differentiate or segment the market. The fundamental wisdom of marketing remains: me-too products are likely to fail, especially in the face of price competition (when the follower cannot generate trial simply by price discounting). The barrier to entry is greatest when uncertainty about product performance plays a major role in the purchasing decision. If there is a genuine risk of failure or an unsatisfactory experience, then the reputation and perceptual dominance of the pioneer become overwhelming. All of this held constant, the follower is generally in a weak position vis-a-vis the pioneer when:

- the market has developed and matured quickly so that potential sales growth has slowed to more normal levels;
- the level of repeat purchase is high, or the time between purchases is long; and
- the product category is well defined around a stable set of known attributes.

Pioneers gain from stability followers from instability.

Cumulative innovation

So far in this chapter we have concentrated on the single event: the innovation that opens up a new market or creates an important new, distinct segment. In many established industries, however, the central issue today surrounds the capacity of the organisation to manage a continuing flow of innovation. Each of these steps may be an incremental advance, but their cumulative impact is competitively very powerful.

Let us consider the heart pacemaker industry as an example.[33] Pacemakers are a relatively new industry, which emerged only in the early 1960s. As with many innovations, completely new firms sprang up to develop this market—led by Medtronics in the US, and including the Australian firm Telectronics, once an independent company, then part of the Medical Division of Pacific Dunlop and now independent again. On a world basis, half-a-million pacemakers are implanted each year, with industry revenues exceeding US $1 billion.

Early pacemakers were large, relatively short lived (due to battery problems), difficult to implant and very simple—providing a constant pacing stimulus whatever the patient's needs. But in the space of 25 years, the product range has evolved in many important ways:

- Improvements in battery technology have allowed a substantial reduction in size (with less invasive surgery) and improved life (1974).
- The pacemaker can now be implanted and then programmed externally by telemetry, allowing finer adjustment to the patient's needs (programming—1971; Lithium batteries—1974).
- The introduction of dual chamber devices serves more complex heart conditions (and so widens the potential patient base) (1979).
- New sensors and integrated circuits allow pacemakers to be rate-responsive, adapting to the change in the load on the heart over time (1985).
- Defibrillators were introduced to control accelerated heartbeats (1985).

With the benefit of hindsight, we can see that some of these innovations had a more profound effect than others; however, the companies responsible for being able to continuously up-grade their product lines were the most successful—Medtronics, Cordis, Intermedic and Telectronics. Indeed, the developments in the pacemaker industry highlight the importance of cumulative innovation as a major source of advantage to existing competitors. Table 5.6

Table 5.6: Incremental innovation in the pacemaker industry

Development	Year Developed	Introduced by (and number) Incumbent	New entrant
Demand standby pacer	1965	1	2
Programmable pacemaker	1971	0	1
Pacer programmer	1973	0	1
Lithium battery	1974	2	0
Telemetry	1976	0	1
Multiprogrammable pacemaker	1979	1	0
Dual chamber pacemaker	1979	2	0
Antitachycardia pacemaker	1983	1	1
Rate responsive pacemaker	1985	1	0
Antitachycardia plus defibrillator	1985	1	0
Defibrillator	1986	1	0

Source: C. Banbury and W. Mitchell, 'The effect of introducing important incremental innovations on market share and business survival', *Strategic Management Journal*, 16, 1995, 161–82.

shows the development of pacemaker industry innovations over time and the source of the innovation. It is clear that as the industry developed existing firms were more responsible for sustaining and driving the industry—yet another example of the importance of competence-enhancing innovation.

However, every competitor that has survived has been able to stay on the treadmill of continuous innovation. Failure to do so results in a product line which is perceived to be lagging behind the field, with predictable adverse results. The sales force becomes discouraged; industry experts and leading edge users (e.g., surgeons at world famous clinics) sponsor the most technically advanced products; and the prices of the oldest products decline as new generation pacers are introduced.

This pattern—a major breakthrough creating a new industry followed by continuous incremental innovation—seems very typical. In such industries, two strategic issues become critical—the speed with which new products are developed and the ability to share product development expenditures across

Table 5.7: **Time-based competition in the automobile industry**

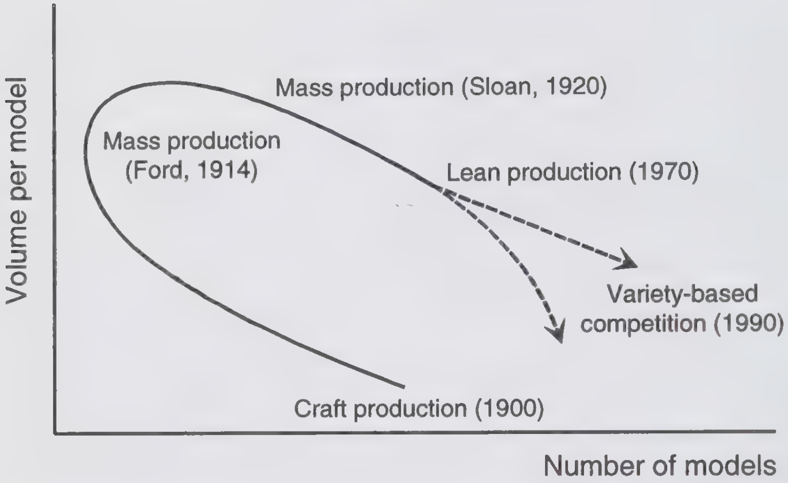
	Japanese	American	European
Average engineering hours per new car (millions)	1.7	3.1	2.9
Average development time (months)	46.2	60.4	57.3
Employees in development team	485	903	904
Ratio of delayed products	1 in 6	1 in 2	1 in 3
Die development time (months)	13.8	25.0	28.0
Prototype lead time (months)	6.2	12.4	10.9
Return to normal productivity after new model (months)	1	4	2
Return to normal quality after new model (months)	1.4	11	12
Number of body types per new car	2.3	1.7	2.7

Source: K. Clark, T. Fujimoto and B. Chew, 'Product development in the world auto industry', *Brooking Papers on Economic Activity*, No. 3, 1987, 29–81.

related companies.

As discussed by George Stalk and in chapter 4, competition is increasingly based on the time delay between the definition of a design concept and its actual launch into scale production, the notion of time-based competition (TBC). For many firms, particularly in the manufacturing and technology fields, strategy will need to be developed in such a way that the company's product development time cycle is equal to (or better than) that of its competitors. Nowhere has TBC been more influential than in the auto industry. Table 5.7 provides a comparison of the product development performance of Japanese, American and European automobile manufacturers during the mid-1980s. The most telling statistics from a TBC viewpoint are the differences in engineering hours, employees and average development time. Even with the greater number of people and time devoted to development, the American and European companies end up with slower development, more faults and a greater inability to get production stabilised than their leaner and quicker Japanese competitors.

Figure 5.8: Evolution of production techniques in motor car manufacturing


Mass production (Sloan, 1920)
Mass production (Ford, 1914)
Lean production (1970)
Variety-based competition (1990)
Craft production (1900)
Volume per model
Number of models

Source: K. Clark, T. Fujimoto and B. Chew, 'Product development in the world auto industry', *Brooking Papers on Economic Activity*, No 3, 1987, 729–81.

These statistics translate into an ability by Japanese auto producers to expand the nature of competition in the industry from small models in mass production to a large number of models in custom production, thereby redefining the nature of competition in the industry. TBC is something of a natural outgrowth of historic trends in the motor car industry, (see figure 5.9) more recently TBC has been expanded by the Japanese auto makers into what is called *variety-based competition (VBC)*; further reducing the importance of economies of scale in favour of economies of scope. Just to prove that too much of a good thing can be a bad thing, it has been argued recently that Japanese auto makers have taken VBC too far and their recent troubles are driven, in part, by too much variety. However, it needs to be understood that the problem is not with VBC itself but the fact that the Japanese may have expanded the number of models beyond the level necessary to adequately segment and satisfy the market.[34]

As product development costs skyrocket it is becoming increasingly evident that in many major industries no one firm is in a position to sustain the cost of R&D leadership in all the technologies relevant to a complex industry. A pacemaker firm, for example, might focus on the leading edge of biomedical sensors and implantable leads. Yet it might choose to rely on others to provide state-of-the-art technology in batteries and application-specific integrated

Table 5.8: Supplier relationships in the automobile industry

	Japanese	American	European
Engineering carried out by suppliers (% of total hours)	51%	14%	35%
Black box parts	62%	16%	39%
Assembler designed parts	30%	81%	54%
Number of suppliers	170	509	442
Percentage of parts single sourced	12.1%	69.3%	32.9%
Inventory level (days)	0.2	2.9	2.0
Parts defects per car	0.24	0.33	0.62

Source: P. Womack et al, *The Machine that Changed the World*, New York: Rawson Associates, 1990.

circuits. This interdependence is fundamental to the rise of *strategic alliances*: open-ended agreements to collaborate which go well beyond the traditional buyer–seller relationship. Ultimately, the combined capabilities of the alliance—rather than of any one firm within it—will determine the competitive payoff for all.

The effect of efficient R&D sharing is seen again in the automobile industry. Table 5.8 demonstrates the efficiency with which the Japanese producers have combined with suppliers in the design and development of new models. Although American and European producers are more likely to use off-the-shelf supplier parts the Japanese are more likely to allow the supplier in on the actual design of the vehicle. This translates into faster and more efficient design and greater efficiency in final production.

Lessons of time-based competition

There are some general lessons related to TBC that are important to summarise here. TBC focuses the company's attention on the issue of the efficient delivery of customer value. With this focus there are two important characteristics of a value adding activity that need to be kept in mind:

- the customer cares about the activity (it adds value); and
- the product or service is actually transformed by the activity.

Table 5.9: Value-added time in some typical processes

Process	Industry	Average cycle time	Value-adding time	Percent VAT
New policy application	Life insurance	10 days	7 minutes	0.16%
New graphic design	Consumer packaging	18 days	2 hours	0.14%
Prototype development	Footwear	125 days	2 days	1.60%
Consumer loan	Commercial bank	2 days	34 minutes	2.36%
Patient billing	Hospital	10 days	3 hours	3.75%

Source: J. Blackburn, *Reengineering for Time-Based Competition*, unpublished working paper, Vanderbilt University, 1994.

For example, many products are over-engineered because quality was defined and determined by the engineers and managers, not the consumers. Also, TBC stresses the notion that a product or service that is not adding value at every point in time is a wasted opportunity. Federal Express is a company that attempts to achieve 100 per cent value-added time in customer service. Value-added time (VAT) is the percentage of time that value is being added to a product or service. By keeping the express package moving to its destination at every conceivable point in time, Federal Express achieves quicker customer service and greater customer satisfaction. Table 5.9 shows the VAT for some common activities and how little of the time is actually achieving value for the customer. For example, a life insurance policy application that a customer waits ten days for takes only seven minutes of actual value-adding time!

The second lesson to be taken from the TBC debate at this point in time is that firms tend to have similar processes for both manufacturing and new product development. This is one of the reasons why we find that firms with faster customer response tend also to have lower costs, greater productivity and more product variety, an apparent natural contradiction. A company focused on speed of response will attempt to remove time delaying and value destroying activities from its business systems. Whether these are jobs waiting behind queues, jobs being moved to new queues, inspections, change-overs or rework they are equally relevant to innovation and production processes. Traditional new product development processes, like traditional assembly line production systems, are too linear and piecemeal to account for the interdisciplinary requirements of modern speed and accuracy-demanding customers.

Summary—strategic issues

The central argument in this chapter is straightforward. *Innovation is perhaps the most powerful single force affecting competitive position.* Innovation potentially allows the company to define the market around its product offerings and to reap the benefits of early market dominance. That is the good side of innovation. On the dark side is the fact that innovation implies continuous market disequilibrium, giving potential competitors yet one more chance to fight for transitory market dominance. We should emphasise that these ideas do not add up to the conclusion that every firm must commit itself to a path of radical innovation or early entry at any cost. The cost and risk of such an innovation strategy is high. Just ask John Sculley about the personal and monetary cost of committing Apple to the Newton project (see Case 5.5).

A final significant issue of strategy emerges. Over the last ten years empirical and anecdotal evidence has pointed more and more to the important role that managing change plays in defining the strategy of the corporation. As Paul Romer[35] notes, 'increasingly the challenge for the modern corporation is to carefully replicate processes that work and constantly look for better ones'. Under such a system, 'firms will increasingly take advantage of each person's innate curiosity and willingness to experiment'. Innovation strategy is really a strategy of managing for change. But as Romer points out innovation is really an output of the management and strategy process. Badly managed firms do not innovate their way out of problems (look, for example, at RJR Nabisco's attempt at developing the Premier smokeless cigarette). Firms strategically structured to deal with market change innovate because that goes hand-in-hand with the company's organisational imperative. Innovation does not cause superior performance. Innovation and superior performance are themselves both functions of superior strategic thinking and organisation structure.

Case 5.5 The Newton saga

The risks associated with radical innovation and the attempt to be the first in the market with a new product are amply illustrated by the development of Apple's Newton hand-held computer.

The Newton was conceived in 1987 out of the frustration of Steve Sakomen, an engineer who wanted to develop a computer interface based on a pen-like stylus rather than the traditional keyboard. In April 1990, an Apple research team was given a deadline to develop a finished product by 2 April 1992, a deadline that was to prove impossible to meet.

The product was billed by Chief Executive John Sculley as one that would set Apple apart from the rest of the computer industry. The palm-sized computer would read hand-written notes jotted on its screen with a special pen, convert them into text, store them for future use and even transmit them wirelessly to other computers. Artificial intelligence would allow the machine to anticipate the user's requirements, such as entering into its electronic datebook an appointment time transmitted from someone else.

Unfortunately, Sculley did not understand his own product, or how much time it would take to make it work. He promised too much too soon, and by trumpeting the Newton so aggressively, encouraged competitors to work on their own products.

Within months, the Apple design team realised that many of the capabilities that were being sought for the Newton were not feasible within the allotted time frame. The design team abandoned many of the hoped for wireless communications capabilities, although the ability to convert handwriting into text and organise information was retained.

The design team ran into further problems when the development of the programming language to be used with the Newton, called Dylan, also fell behind schedule. The design team decided to throw out the new language, which meant effectively returning to the drawing board with the use of a more conventional language.

The result was a product Apple engineers nicknamed the 'Newt'. The new product lacked many of the originally hoped for features. The new version was rationalised as one that could be finished, albeit more than one year behind schedule.

Meeting the new deadline, even with the more conventional programming language, still required a Herculean effort. The head of the design team converted his home into an office, where he worked around the clock with two other Apple engineers to finish the product. The pressures involved in meeting the self-imposed deadline proved too much for some. One Japanese member of the team committed suicide. Another had a break-down and ended up in jail.

The Newton was finally launched in August 1993, without many of the wireless communications and artificial intelligence capabilities originally foreshadowed by Apple. Despite the enormous effort that went into its development, the product proved to be an anti-climax. Apple sold only 50,000 units in the first four months.

The Newton offers a study in the pitfalls awaiting companies that are too hasty in attempting to define a new generation of product.

Source: Adapted from, 'Tortured Soul of a New Machine', *International Herald Tribune*, 14 December 1993.

Chapter 6

Capacity and cost position

Persons whose capital is already embarked and cannot be easily extricated, will persevere for a considerable time without profit, and have been known to even persevere at a loss, in hope of better times.

John Stuart Mill (1806–1873)

The airline industry is one of the most fiercely competitive industries in the world. With the exception of intra-country airfares in locations with protected or restricted domestic operations (such as Australia), airfares are driven by the necessity of keeping capacity aloft and covering the fixed cost of operations. Fare cutting by one airline is usually instantaneously matched by all the competing airlines. Yet, in spite of this cut-throat competition, several airlines manage to remain profitable and to do so in environments where market protection is not a major determinant of profitability. If we look to the United States, we see the small carrier Southwest Airlines as consistently beating its larger rivals despite a limited route structure. Internationally, British Airways dominates the American megacarriers and the protected international carriers despite lacking the protected market of most international carriers or the route structures of its US rivals.

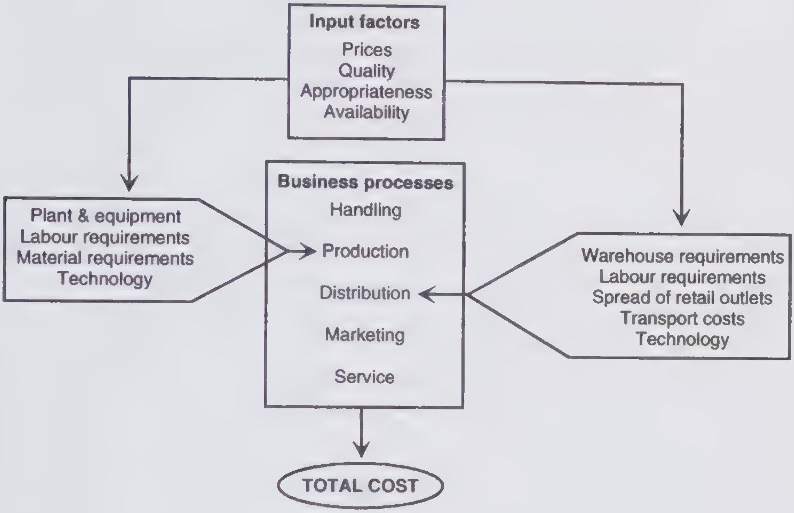
In the cases of Southwest and British Airways, we see examples of the ability to generate profits through the judicious management of the company's cost structure. In the case of Southwest Airlines, the company maintains only one type of airline, the Boeing 737—thereby keeping maintenance costs low; flies to secondary airports in the major cities—thereby avoiding delays and higher landing fees; keeps amenities to a minimum—thereby keeping the service costs down and keeping cabin crew numbers small; and economises on the use of labour by having workers handle more than one job. The end result is that not only is Southwest Airlines' cost the lowest in the industry, but its efficiency as measured by on-time landings and departures is one of the best. Further, it is unsurpassed in its ability to land, unload and load a plane and take off in a short period of time.

Whereas Southwest Airlines' strength is based on its careful balance of its niche market with its cost-driven focus, British Airways' strength has been in its ability to reduce labour costs and maintain a route structure with high capacity utilisation while remaining a full-service provider. For example, British Airways' profit grew by 26.5 per cent in 1992 but revenue grew by only 18.8 per cent implying healthy reductions in cost. This reduction is attributable to increased utilisation of aircraft, up 8 per cent in 1992 and forecast at 6 per cent for 1993, and a 2.9 per cent reduction in employees and a 14.9 per cent increase in employee productivity. Future plans are for tight quality controls as well as substantive cost savings goals.[1] In both this case and Southwest Airlines, we see a market that, although close to perfectly price competitive from the economist's standpoint, allows for sustainable advantages based on cost leadership.

For the manager, this discussion raises several important questions pertaining to the firm's cost structure that need to be understood. Is our business one in which competitors are basically on an equal footing in terms of cost? Or is it possible to achieve and sustain a low-cost position relative to competitors? In particular, is it likely that the company achieving a cost advantage can sustain and build on this advantage in the face of entry by would-be, low-cost pretenders?

In this chapter, we will be focusing on two aspects of the determinants of a firm's cost structure, as well as on how that structure can be used to maximum competitive advantage. On the static side, we will be looking at the factors that affect the firm's level of cost at any point in time and what is the appropriate strategy with respect to scale and capacity. On the dynamic side, we will be looking at how cost structures can evolve over time and what decisions by management can affect the speed with which cost structures change. This will require us to revisit our discussion on the role of time-based competition.

Figure 6.1: Examples of drivers of cost along the value chain


Input factors
Prices
Quality
Appropriateness
Availability
Business processes
Handling
Production
Distribution
Marketing
Service
Plant & equipment
Labour requirements
Material requirements
Technology
Warehouse requirements
Labour requirements
Spread of retail outlets
Transport costs
Technology
TOTAL COST

What determines cost differences?

Let us begin by looking at what determines the level of cost and scale associated with a firm's operations and how these might differ. The most obvious starting point is a value chain of the business processes of the firm. In figure 6.1, we have a firm with five business processes defining what the firm does—handling of raw materials, production, distribution, marketing and service. The total cost facing this firm will be defined by the combination of the costs of all of the individual components of the value chain. As was noted in chapter 4, and will be repeated in chapter 7 in more detail, it would be hoped that the synergies between these links in the value chain would be sufficiently strong that the sum of the costs is greater than the firm's actual total cost. Putting this aside for the moment, we find that we can break the cost down into two parts: the costs of the inputs to the process, and the technologies of the processes themselves. This is easier to see by examining two of the components of the value chain, production and distribution.

Examining production, we find that we are interested in the need for plant and equipment (P&E), materials and labour. The technology defines how these are combined to determine the total cost of production. We can, of course, think of technology more broadly which means that it includes not only the technology of putting things together but also the managerial technology behind the production. Which technology we choose will be a function of what the requirements are—P&E, labour and materials and so on—and what the costs of the components of the requirements are—the cost of P&E, labour and material, etc.

The merit of breaking down a company's value chain can be illustrated by two examples—textile manufacturing and motor car assembly. In the US, textile manufacturing is quite capital intensive because of the relatively low capital costs and high labour costs. In Mexico, on the other hand, the opposite is true, with capital costs high and labour costs low. Therefore, Mexican textile manufacturers are quite labour intensive. Yet, in the end, the price of Mexican textiles is only marginally cheaper than American textiles. And because capital intensive production has a greater fixed cost component, the scale of operations needed to achieve minimum efficiency is larger for the American manufacturer than for the Mexican manufacturer.

The same phenomenon can be seen with motor car assembly. If we examine Nissan's operations world-wide we see a similar phenomenon. Its Japanese operations face very high labour costs and, consequently, use the least labour and the greatest amount of automation. Its Mexican operations face low labour costs and its Mexican plants are some of the most labour intensive in the industry. Interestingly, Nissan's Mexican plant is one of its most efficient and highest quality operations.

From the distribution perspective, there are warehouse and labour requirements but we might also be concerned about the spread of retail outlets and the cost of transporting products to them. We may also be concerned about the nature of distribution technology. Wal Mart's development as a major retailer in the United States was driven, in part, by its ability to integrate a sophisticated computer distribution system, known as 'cross docking', into its retail operations.[2] However, the cost of this technology implied that Wal Mart had to be a big player. The scale associated with the efficient use of the technology was what determined Wal Mart's scale, not the nature of retail production, in other words the cost of running a single store. The technology associated with store operations implies moderate economies of scale (EOS). However, once we add the enormous EOS associated with national advertising and the cross docking system, Wal Mart needed hundreds of stores to utilise these resources effectively.

The implication of this discussion is that to understand the differences in costs between companies it is important to understand the differences in the components of their value chains and then to push deeper into what are the differences in the sub-components of these components; that is the core resources and business processes. In chapter 4, we used a comparison of Caterpillar and Komatsu to highlight the importance of value chain analysis. It is interesting to note that, during the 1980s, neither company appeared to have much of a cost advantage over the other; however, the distribution of these costs was quite different. Although Caterpillar used approximately 78 per cent of its costs for production, it used a relatively small 12 per cent for marketing. Alternatively, Komatsu's share was 70 per cent for production and 20 per cent for marketing. What drove this discrepancy was their different business processes, something that was itself driven by the different histories of the two companies and the markets they served. Caterpillar relied on its dealer network to keep marketing costs down but its product line, customer base, labour costs and production technology forced production costs up. Komatsu was just the opposite. A narrower product line and a leaner technology kept production costs down. However, the need to penetrate markets forced it to use its own marketing network and devote more resources to this side of the process.

In examining the drivers of cost, the manager must be careful to focus on productivity, or effective cost, and not simply cost *per se.* If we compare Germany and Spain we see a world where German workers are paid twice the wage of their Spanish counterparts; however, Spain is not always a production alternative when compared with Germany (Spain's 25 per cent + unemployment rate implies something!). Although German workers are more expensive, German production systems have adjusted to this and total productivity remains quite high. Therefore, companies with experience with automated production and high demand for skilled labour may choose Germany over Spain. In addition, although it is difficult to fire workers almost anywhere in Continental Europe, it is virtually impossible to dismiss a worker or close a plant in Spain. Under these circumstances, the advantages of low wages are countered by the inflexibility of Spain's labour laws.

A second factor affecting productivity and firm structure is the availability of factor resources. Access to low-cost hydroelectric power in countries such as Canada and Venezuela and in Tasmania has had direct impact on the types of industries that choose to locate in those places, for example smelting and refining operations. Access to high skilled labour and ideas has fuelled the development of industrial and technology centres in the US—Silicon Valley and Route 128 (from Cambridge)—and Europe—for example the Oxford ring and the Ruhrgebiet. In Australia, Boral grew up as a company developing products as a by-product of oil refining, and BHP's steel operations were directly linked to its access to cheap raw materials. Proximity to resources, even in a world of declining transport costs, is a powerful determinant of company cost and structure.

However, it would be naive to assume that cost and productivity differences can be attributable only to the nature of production and the cost and availability of inputs and not to the nature of the products being produced by the firm. As we discussed in chapter 5, the ability to link product design to production is a critical determinant of the success of a new product and the efficiency with which that product can be produced. A comparison of General Motors' Fairfax

Table 6.1: Productivity at Ford Atlanta versus GM Fairfax

	Percent of productivity difference
Sourcing	9%
Processing	2%
Design for manufacture	41%
Factory practices	48%

Source: J. Womack et al, *The Machine that Changed the World*, New York: Rawson Associates, 1990, p. 97.

Virginia assembly plant with Ford's Atlanta Georgia plant found that Ford's plant was not only much more productive but that 41 per cent of the productivity difference was due to product design (see table 6.1).

It follows, then, that the complexity of consumer demand and how a company chooses to meet that complexity is a significant determinant of cost. If we examine the international expansion of the Japanese motor car manufacturers, we see an excellent example of this. Early in their expansion, the Japanese companies used a strategy focusing on small cheap cars. Production was standardised on a few platforms and models with price being the primary characteristic. This was effective since the American manufacturers had committed to many products over many platforms. In the face of this competition, the Americans conceded the cheap small car market to the Japanese upstarts. The Japanese then expanded this idea to encompass more models on a single platform. However, as they did so they began running into the reality that their costs simply had to rise as they attempted to meet more complex customer demands.

Finally, it is critically important to understand that the market itself, through the size or limit of the market, will have an impact on costs. Small countries like Australia and New Zealand find the scale and scope of firms limited simply due to the inability to expand operations sufficiently to get to some minimum efficient level. This can create problems for firms in these countries even beyond their borders. Take, for example, a Canadian consumer products manufacturer who can make 100,000 units of a product at $1 and sell 75,000 in the North American market. The cost of shipping the product to Australia and Europe is $0.25 so the cost of the product in these areas is $1.25. An Australian manufacturer is facing exactly the same production technology but can sell, at most, 5,000 units at home. Even if the Australian manufacturer can achieve the Canadian company's level of operations, it would face a $0.25 cost penalty for any units it sold in North America. Suppose this penalty is sufficient to keep the Australian company out of foreign markets. This, in and of itself, is probably sufficient to bankrupt the company since, at a 5,000 unit production level, its cost would be much higher than the $1 cost of the Canadian company.

A McKinsey study points to the importance of an export focus for companies in a country like Australia.[3] Firms that produce for larger markets outside Australia have significantly higher growth and profitability rates than those attempting simply to push a product developed originally for the domestic market. Successful exporters appear to choose their strategy wisely. Smaller companies focus on unique product features, thereby taking cost and price out of the equation. Medium to large companies focus more on capacity utilisation bringing cost back into the equation.

Summary—static cost position

The strategic importance of a firm's static cost position is driven by a combination of the company's environment, its historic choices and the current policies of management. The list in table 6.2 uses a value chain analysis to summarise some of the determinants of a firm's cost position at any point in time. The list is meant to be illustrative rather than exhaustive.

Although a firm can alter its position marginally over short periods of time, it is difficult for corporations to undo their history or buck the competitive environment. At one level, the firm's cost position is reflective of its unique assets and competencies, both positively and negatively. At another level, it is a reflection of the economic structure and environmental conditions facing the company. The economic structure includes the natural economies of scale and scope associated with specific technologies available to the company. Environmental conditions could be cost increasing, as in the case of taxation, stringent labour standards or local content requirement, or cost reducing, as when a company has the advantage of low-cost source materials. The importance of these two sides of a firm's cost equation is highlighted by the evolution of cost and capacity in the disk drive industry in the early 1980s. The industry quickly went from high-tech to a commodity market where cost and price were driven increasingly by scale and the search for low-cost sources of supply.

Learning, experience and technical progress

So far, we have concentrated on the static side of the determinants of cost-based advantages. However, much of the cost advantage bestowed upon firms is due to the dynamic time-based nature of the evolution of their production processes. This source of advantage can be broken into three parts: learning-based cost

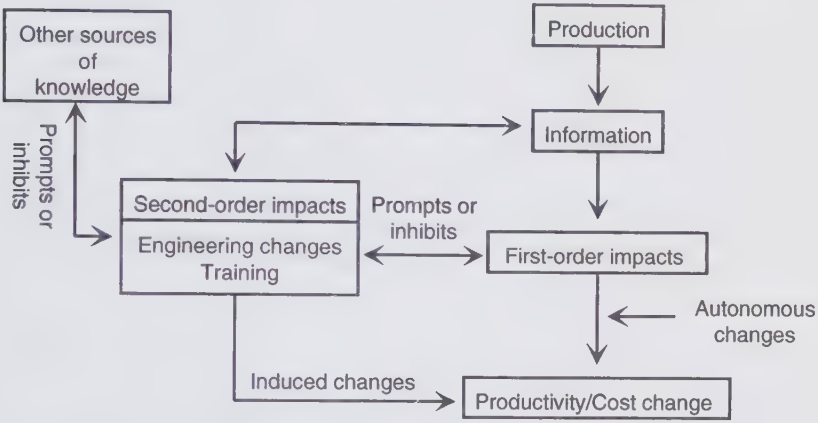
Table 6.2: Illustrative drivers of cost

Value chain activity	Factors affecting cost
Raw materials inventory	Purchasing scale and scope Supplier delivery schedule Cost of raw materials Seasonality of material availability Inventory/purchasing technology Interest rates (opportunity cost)
Production facilities	Scale and scope of operations Seasonality of production Age of facilities Production technology Cost of capital/Cost of labour/etc.
Distribution	Regional scale and scope Location of warehouses Fluctuations and seasonality in demand Distribution technology Cost of capital/Cost of labour/etc.
Marketing	Scale and scope of operations Regional responsiveness Advertising/Promotion cost Channel choice (e.g., retail, franchise) Geographic distribution/Density of customers Seasonality/Fluctuations in demand Service requirements Cost of capital/Cost of labour/etc.
Administration	Scale and diversity of operations Geographic distribution of operations Technology requirements Speed of administrative responsiveness Cost of labour and equipment

advantages, encompassed in the notion of a *learning curve*, technical or process innovations, embodied in what is known as *technical progress* or progress functions, and experience effects, which are encompassed in what are known as *experience curves*.

Before advancing to a discussion of the attributes of each of these ideas, it is valuable to stand back and provide an overview of a structure that appears consistent across these ideas. Even though the three concepts focus on different causal factors, they are all concerned with how the cost of production and

Figure 6.2: The determinants of cost and productivity improvement


Other sources of knowledge
Prompts or inhibits
Production
Information
Second-order impacts
Engineering changes
Training
Prompts or inhibits
First-order impacts
Autonomous changes
Induced changes
Productivity/Cost change

Source: Adapted from P. Adler and K. Clark, 'Behind the learning curve: a sketch of the learning process', *Management Science*, 37, March 1991, 267–81.

business processes changes with time. Figure 6.2 provides a very general schematic of how we might think about the process that drives cost changes over time.[4] The idea is quite simple but encompasses the main ideas that we will be discussing.

We can think of the process as beginning with production. Production begets information which has a direct impact on the nature of the production process. These are what we will call first-order impacts. *First-order impacts* include things like the economies or diseconomies of scale that would occur naturally because of changes in the production level. Also included would be the development of routines or simple learning through repetition. First-order impacts drive productivity and cost changes through *autonomous changes* that occur without the intervention of management. However, the generation of information, as well as information from other sources, causes the firm to engage in activities that are directly aimed at changing the nature of production or business processes. The *second-order impacts* of this information, in combination with external sources of knowledge, drive *induced* changes. Second-order impacts would include the development of new complex heuristics or rules by the organisation, the development of new process technologies, or the development of new or better administrative and production techniques through direct training. Both induced and autonomous changes in the nature of the business process then impact on productivity and cost.

The key to understanding the logic of this discussion is to recognise that production activity leads not only to products but information as well (the reader is referred to the discussion of the production of knowledge in chapter 1). This knowledge drives changes in the nature of production in two ways, purposeful, or induced, change and non-purposeful, or autonomous, change. The important decision facing management is how to determine what the level of autonomous change will be and how to fully utilise resources to take advantage efficiently of the potential for purposeful change.

One of the characteristics of this process is that we don't know *a priori* whether these changes are for good or ill or whether the information will actually retard change. Levitt and March[5] note that the common belief that learning invariably moves us closer to some hidden truth or correct outcome is a myth not borne out by scientific scrutiny. Since most corporate learning or experience is of the trial-and-error or incremental search variety where outcomes are evaluated as successes and failures, there is a bias towards the reinterpretation of objectives to make failures look successful. In addition, since most learning or experience is not structured like a scientific experiment, nor are systems usually in place to evaluate and transfer experience, most organisations get by with superstitious learning. Superstitious learning occurs when 'the subjective experience of learning is compelling but the connections between actions and outcomes are mis-specified' (p. 325). Interestingly, superstitious learning tends to be more prevalent in successful organisations. Unlike unsuccessful companies, successful companies will many times erroneously associate unrelated activities with the firm's success, leading to a situation where these activities are difficult to change because of the erroneous belief that they are a source of success. Case 6.1 provides an introduction to the dynamic of organisational learning and its relationship to productivity and quality improvement at Analog Devices.

Case 6.1 Organisational learning at Analog Devices

During the 1970s Analog Devices had grown consistently at a rate of about 25 per cent per year. Then for the first time, between 1982 and 1987, the company missed its five-year goals by a wide margin. Ray Stata, Chairman and President, came to the conclusion that a lack of product and process innovation were not the primary obstacles to further progress. Instead, the problem lay in inadequate management innovation, which meant the company was unable to take full advantage of its technological leadership.

Organisational learning is the principal process by which management innovation occurs. It occurs through *shared insights*, *knowledge* and *mental models*. Thus organisations can only learn as fast as the slowest link learns. Change is blocked unless all of the major decision makers learn together, come to share beliefs and goals and are committed to take the actions necessary for change.

Learning builds on past knowledge and experience—that is, on memory. Organisational memory depends on institutional mechanisms (e.g., policies, strategies and explicit models) used to retain knowledge. Of course, organisations also depend on the memory of individuals. But relying exclusively on individuals risks losing hard-won lessons and experiences as people migrate from one job to another. The challenge, then, is to discover new management tools and methods to accelerate organisational learning, build consensus for change and facilitate the change process. Systems thinking, and in particular, system dynamics, is a powerful tool to facilitate both individual and organisational learning. One of the early lessons learned from system dynamics is that organisations are like giant networks of interconnected nodes.

One of Analog Devices' strongest beliefs was that the best way to organise its resources was to use relatively small, autonomous divisions. However, as the company worked its way through the planning process, it became clear that the almost fanatical commitment to decentralisation was impeding progress. Another strong belief that did not stand up to scrutiny was that the firm had to choose between a proprietary, differentiated product strategy and a low-cost producer strategy. This either/or choice has proven to be a false and misleading alternative not only for Analog Devices but for many other US companies as well. Analog Devices decided that its long-term strategy should be to serve certain selected high-volume applications where their technology provides unique benefits, lest competitors capture these markets, learn Analog's technology and eventually use a lower cost structure to penetrate its traditional lower-volume markets.

Analog Devices decided to focus its attention on product quality, on-time delivery, lead time, yields and new product time to market. One of the early lessons was that there is a rational basis on which to set standards for rates of improvement. Case studies show that while the rate of quality improvement varies from case to case, the rate in each case is remarkably consistent over an extended time period. The quality improvement theory says that learning, properly managed, occurs as a function of time, independent of cumulative volume. This is in contrast to the Boston Consulting Group's 'experience curve', which says that learning is a function of cumulative production volume. Instead, the slope of the experience curve is determined by the rate of organisational learning.

Quality improvement is a way to create temporary organisational structures or teams that cut horizontally across organisational boundaries and enhance communication and co-operation. It is a way to get people to think about problems and issues objectively and quantitatively instead of subjectively and politically. It is a way to separate the vital few problems from the trivial many—and to focus organisational resources on resolving them. In short, quality improvement is a way to accelerate organisational learning.

Analog Devices also decided that another imperative for change was to elevate teamwork as a virtue in its culture. This meant emphasising the concepts of openness and objectivity. Openness entails a willingness to put all cards on the table, eliminate hidden agendas, make motives and biases known and invite other opinions and points of view, thereby engendering trust in relations between people. Objectivity entails searching for the best answers based on reasoned positions and objective criteria, as opposed to political influence and parochial interests.

Information is essential to the learning process. It is helpful to think about information systems in terms of whether they help or hinder organisational learning. Analog Devices found that its system of transfer pricing inhibited organisational learning. In its place, it adopted a system of world-wide product line reporting. This management system focuses division and affiliate managers on common goals and performance measures that encourage co-operation rather than conflict.

Among engineers and scientists there is a consensus that collaborative research promotes innovation and competitiveness. Experience has shown that an effective partnership should include the following characteristics: a focus on critical management problems; develop and disseminate new learning tools and methods; test tools and methods in practice; provide cross-organisational learning; and use a cross-disciplinary approach.

Management innovation is already an important aspect of industrial competitiveness and it will become even more of a factor in the future.

Source: Adapted from R. Stata, 'Organisational learning: the key to management innovation', *Sloan Management Review*, 63, Spring 1989.

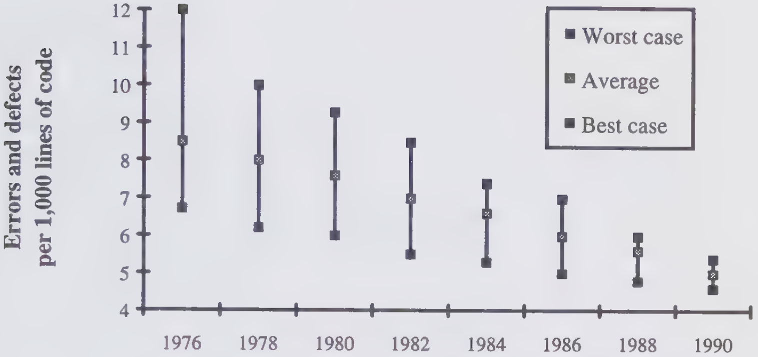
The learning curve

The argument behind the 'learning' curve is simply that, as an individual worker, or a group of workers, or a factory learns how to do something, they progressively reduce the cost in a predictable fashion. The learning curve came into prominence during World War II, where it was discovered to be a useful cost control and prediction device for the assembly of aircraft. It has a long tradition in the aircraft industry in which measured rates of reduction in the number of hours of assembly time required to complete tasks was found to follow a very stable pattern.

Learning curves can be thought of as being of two forms, examples of which are shown in figures 6.3 and 6.4. The first is a productivity-improvement learning curve. Figure 6.3 shows the improvement in software quality at the Goddard Space Laboratory in the United States. The vertical axis is a measure of productivity or quality, in this case errors per 1,000 lines of code. The horizontal axis is some indicator of the time having been spent on the task, in this case simply measured by years.

The second example represents a performance-based learning curve (see figure 6.4). The vertical axis represents an output measure, in this case cigars rolled and hemmed per hour, and the horizontal axis a measure of activity, in this case days since beginning the task. In this example, it takes only around three

Figure 6.3: Software quality at the Goddard Space Laboratory



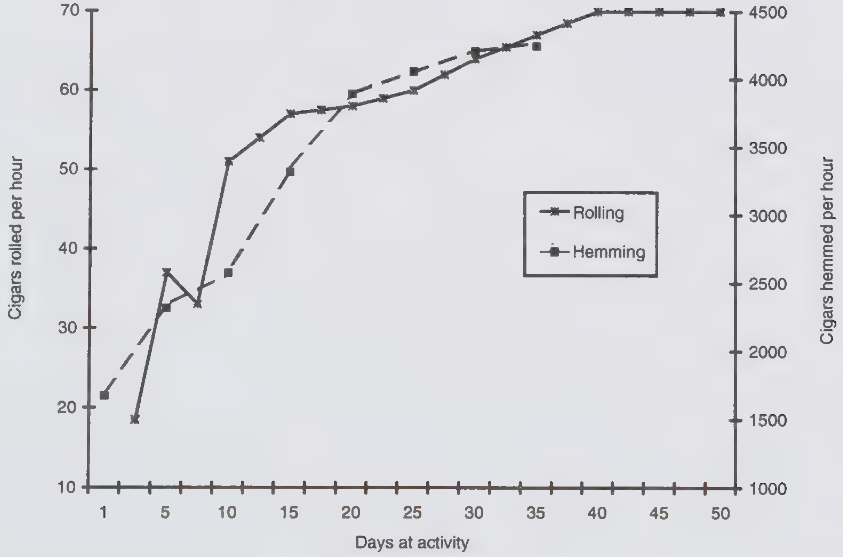
Source: *Business Week*, 25 October 1992.

weeks to learn leaf selection and processing. However, the gains from initial performance levels are quite large—for rolling, there is an improvement of almost 150 per cent in the first week, an additional 29 per cent in the second week, and a 14 per cent improvement in the third week.

The fact that a learning curve exists is hardly a revelation. However, understanding the dynamic of what enhances learning is helpful in making the greatest use of the concept. The learning curve concept can be broken into two parts: that which can be directly affected by management activity, in other words second-order learning; and that which does not appear to be directly controllable by the firm, in other words first-order learning. First-order learning is best understood as the productivity improvements that would occur simply through 'learning-by-doing', without any intervention through training and other means. Second-order learning is driven by individual, group or organisational initiatives aimed at directly improving productivity, quality or cost.

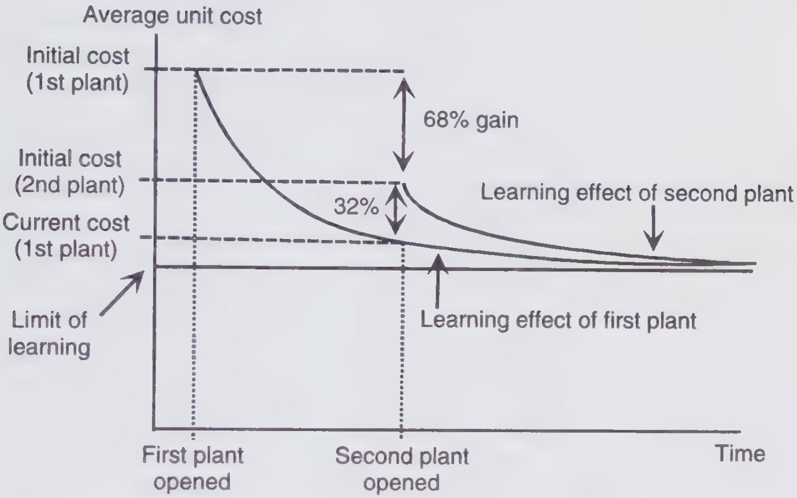
One aspect of learning that is particularly important is the distinction between own-firm learning and industry learning. *Own-firm learning* refers to the learning that is the result of activities within the firm. *Industry learning* refers to the learning that is general knowledge to the industry. Industry learning can be thought of as the leakage of own-firm learning into the marketplace. You simply couldn't have industry learning without own-firm learning. Much of small-firm innovation can be considered a type of industry learning since it is the product of a leakage of knowledge. Although industry learning benefits later entrants into the industry, its existence provides a disincentive on the part of firms to invest

Figure 6.4: Learning in cigar manufacturing



Source: E. Hackett, 'Applications of a set of learning curve models to repetitive tasks', *The Radio and Electronic Engineer*, 53, January 1983, 25–32.

Figure 6.5: Shared learning across plants



Source: P. Adler, 'Shared learning', *Management Science*, 36, August 1990, 938–57.

in second-order learning. Own-firm learning that can remain proprietary serves as the basis of a sustainable competitive advantage.[6]

A second aspect of learning that should receive particular attention is the ability to transfer learning from one product or market to another, as well as across business processes. Adler[7] presents a study of a multinational company that shows significant gains from multiplant learning. Figure 6.5 shows a simplification of his results. On average, when the company opened a new plant, it managed to do so with the added advantaged of 68 per cent of the initial plant's learning. According to Adler, such shared learning was due to having debugged the problems in the earlier plants and the ability to transfer the information to the next plant down the line. The fact that the shared learning was not 100 per cent was due to new problems arising in the new plants (many were in different countries) and the inability of the company to transfer all of its prior learning. After having done the study, the company gave world-wide production authority to product managers to speed up the process of diffusing information across the company.

More complex examples of shared learning can be seen in the case of Corning and BHP. Corning, a US glass manufacturer and the parent of 'Corningware', has built up a phenomenal expertise in building and running alliances. In fact, the company is so strong at finding and developing alliances that more than 50 per cent of its operations are shared with other companies. Much of BHP's core competencies are buried within the accumulated learning it has developed through years of production and expertise. Although mining is a non-transportable product, the learning gained through years of operation of some of the world's most efficient mines is. From one perspective, BHP's foreign direct investment activities can be viewed as a means of achieving a return to its learning—something that can only be done through the purchase of overseas mines. Note that BHP might not want to operate the mines simply for fear that its learning might quickly be utilised by competitors.

Learning is a vital source of competitive advantage to the extent that the firm can keep such learning proprietary and spread the learning over more products and markets. In many cases, this is easy to do since learning tends to be company specific. However, the adaptation of lessons learned from other companies can allow rivals to convert even the most idiosyncratic types of learning to their own use. The strategic importance of learning is outlined in Case 6.2 on Volvo.

Case 6.2 Learning at Volvo

Since the 1960s, Volvo has embarked on a path of pragmatic trial and error in an attempt to increase efficiency and continually adjust to the demands of a changing work force. Much of the change at Volvo was driven by the need to reduce absenteeism rates that were as high as 50 per cent, and was reflective of the public debate in Sweden as to how to make work more meaningful.

Volvo's experimentation began in the mid 1960s with a modest plan to rotate people into new jobs. This lessened fatigue and repetition while also acquainting workers with more of the entire assembly process. Most workers found that it was difficult to do another worker's job. In 1966, the firm expanded this system by training workers to do all fifteen jobs associated with the assembly of seats. This philosophy was quickly expanded to other jobs and, by 1969, Volvo was giving responsibility to work groups. At the Torslanda plant, these work groups had responsibility for planning, quality control and general work conditions. At the Lundby truck plant, the work group philosophy was used to expand the assembly tasks so as to reduce repetition while increasing quality and productivity.

The company's big experiment came with the development of the Kalmar and Skövde plants. Taking the lessons of the small experiments at Torslanda and Lundby, Volvo developed work rules and procedures that were meant to change the nature of motor car production in Europe. The assembly team approach became the centrepiece of the Kalmar facility. However, the Skövde plant pointed out how much friction there can be on the learning curve. Some workers resisted the changes since they actually preferred doing one routine task all day. Many supervisors felt threatened by the fact that workers were making changes without their approval and that these changes could potentially threaten their position. Despite these initial problems, management, staff, unions and workers were

Problems and solutions at Volvo

Problem	Managerial solution
Absenteeism (1960s)	Job rotation
Employee turnover	Job enlargement
Recruitment costs	Participatory production
Ergonimic problems	Teams
Changed work expectations	Organisational development program
Shortage of workers	Flexible hours to attract women
Machine intensity	Couple shifts to reduce idle capacity
Absenteeism (1970s)	Six shift system

eventually able to work together to lower absenteeism and increase productivity.

Volvo went on to develop a number of innovations based on its ability to learn from its employees and from experimentation with its labour practices. The Köping facility was one of the first in the world to experiment with flexible work hours. At the Olofstrom plant, supervisors took on more managerial roles while teams of operators took it upon themselves to handle the supervisor's duties. At the Tuve facility, workers were paid not only based on performance but also on skill acquisition. As the workers accumulated skills, their pay was increased. Volvo also learned that old problems will reappear. Absenteeism in the 1960s was driven by the monotony of work. During the 1970s, absenteeism began increasing again, mainly due to labour shortages. Job rotation wouldn't solve this problem since it wasn't driven by job dissatisfaction but rather by the demands of a labour force with a growing percentage of women. The use of flexible work hours and multiple shifts solved this problem.

There are several key lessons to be gleaned from Volvo's experiences:

- The key to organisational learning is individual learning.
- Learning is a dynamic that must be kept going. Employees must be taught to experiment.
- Knowledge must be diffused. All employees are teachers.
- The corporate environment must support and communicate learning values.

Finally, there must be goals and benchmarks that are clear and objective. In the Volvo case, each example of organisational learning can be linked to a simple problem that needed to be solved. The table above outlines these problems and the effective solution in each case.

Source: Adapted from P. Bernstein, 'The learning curve at Volvo', *Columbia Journal of World Business*, Winter 1988.

Table 6.3: Productivity at Ford plants (1913 and 1914)

Minutes required to:	Craft production	Mass production	Percent reduction
Build an engine	594	226	62%
Build a magneto	20	5	75%
Build an axle	150	27	83%
Assemble major components into a complete vehicle	750	93	88%

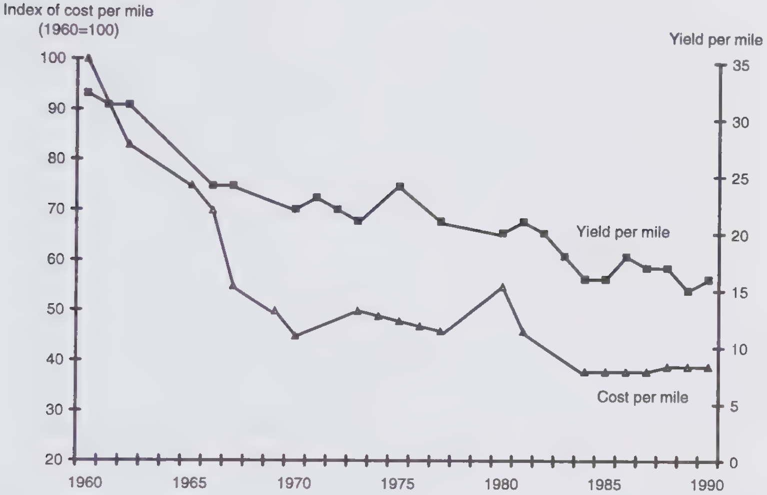
Source: J. Womack et al, *The Machine That Changed the World*, New York: Rawson Associates, 1990, p. 29.

The role of technical progress

The second dimension of the cost dynamic is the role of technical progress. Technical progress entails learning of a technical nature, such as that embodied in product or machine redesign, as well as radical process improvements or discoveries, such as the integration of just-in-time systems into many companies. Unlike experience or learning effects, technical progress can be quite discrete. For example, most examples of learning are found to be rather continuous and incremental, while numerous examples of large discrete technical improvements can be found. Ford provides a classic example of a radical technical improvement. Between autumn 1913 and spring 1914, Ford switched from traditional craft production techniques to mass production techniques. Table 6.3 highlights the enormous increase in productivity associated with that change.

As in the case of learning, technical progress can be firm- or industry-based and span products, markets and business processes. Ford's development of mass production was quickly imitated and adapted by Alfred Sloan at General Motors. Japanese techniques of flexible manufacturing and just-in-time inventory systems were developments initially taken and adapted from American models only to find their way back to American companies in the 1980s. Alternatively, companies like Michelin have been able to protect their technological developments through managerial systems that emphasise the importance of the technology to the company. Michelin's rivals were only able to catch up through their own development of alternative production technologies.

Figure 6.6: Revenue and costs in airline operations (per mile)

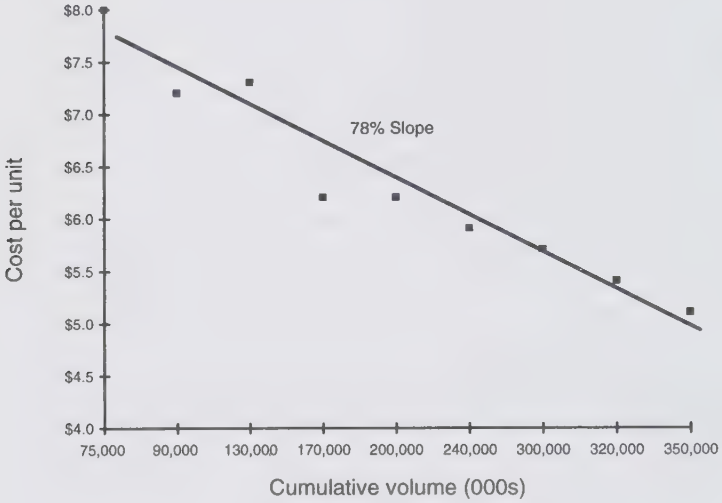


Source: *The Economist*, 25 June 1994.

The experience curve

Learning and technical progress describe a nice neat process whereby cost and productivity changes can be compartmentalised into distinct causes. However, reality is rarely so nice, and attempting to determine exactly which portion of a cost change is due to what cause is quite difficult in practice. Take, for example, the information in figure 6.6 on the change in airline operating costs from 1960 until 1990. We can begin listing the reasons for these cost declines—more efficient aircraft, more efficient route structures, better capacity utilisation, deregulation and the consequent increased competition, new entry, and so on. However, there are countervailing forces taking costs in the other direction—increased oil prices, rising real wages, greater demands for safety, rising landing fees, and so on. However, in spite of these effects, there has been a general trend downwards in the cost of airline operations. We would be very hard pressed to determine exactly which portion of the cost reduction is due to the airline learning and which to the airlines' technical progress. Indeed, even if we could do so, there would be some residual cost reduction that cannot be so easily compartmentalised.

Figure 6.7: Experience curve for the metal bearings industry

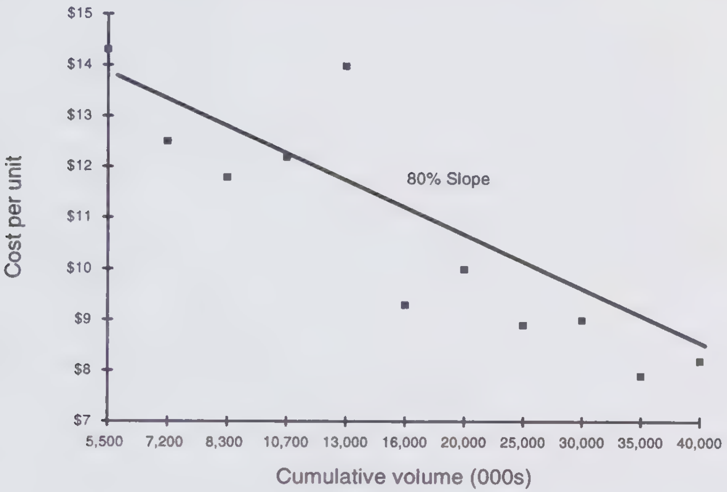


In the mid-1960s a group of consultants at the Boston Consulting Group (BCG), coined the term 'experience curve' to describe the general phenomenon of cost reductions found early in the life cycle of products and industries. The experience curve does not attempt to break down the individual aspects of the cost decline but, rather, serves as a rule of thumb and general phenomenon that is quite powerful and a benchmark for current and future pricing decisions. The logic behind the experience curve is deceptively simple—as the firm gains experience through cumulative production, cost reductions can be expected to follow. Also, rather than focusing on how cost changes with time, BCG scaled cost changes against cumulative production using the simple relationship:

$$\text{Log}_e(\text{unit cost at time } t) = A + B\,\text{Log}_e(\text{Cumulative production at time } t),$$

where Log_e is the natural logarithm and cumulative production is the sum of the units produced since the start-up of operations. A would then represent the initial average cost of production and B would represent the experience effect. Figures 6.7 and 6.8 exhibit this relationship for two different product categories, metal bearings and welding equipment. Even in these two different industries, the cost declines are quite similar, a fact that was readily latched onto by the BCG consultants. Both graphs show an approximate 80 per cent experience curve effect ($B = 0.80$). Such an effect implies a 20 per cent reduction in cost

Figure 6.8: Experience curve for the welding equipment industry



with every doubling of cumulative experience. The apparent consistency of this effect led many a company on the elusive drive for 'experience' through a rapid accumulation of market share.

The importance of understanding the cost dynamic behind the experience curve can be illustrated in a simple example. Consider a situation where two companies were in direct competition and both faced costs that followed experience-type patterns. The myopic competitor following a cost-plus strategy would be doing little more than following the reduction in cost over time. However, the experience-based competitor would recognise that pricing low early and going for scale of production would lead to a situation where it would dominate its myopic rival. The myopic firm would price high early and be undercut, thereby losing sales and valuable cumulative production experience. Having lost this advantage early, the myopic rival would find it very difficult to leapfrog the experience-based competitor. At any level of price in the future, the experience-based competitor would be assured of making more profit, or suffering smaller losses, than the myopic firm.

Although this appeared to be a stylised example, it is actually what happened in the computer chip market in the United States. Japanese companies were accused of dumping computer chips on the market at below cost. However, in spite of the fact that these chips were indeed priced below cost, there was no indication that they were below future predicted costs once the future dynamic of the cost function was taken into account.[8] Indeed many so-called 'dumping' actions by companies may be quite rational if the company is pricing based on some expectation of cost (and capacity) over time and not the actual cost early in the product's life cycle.

As noted in chapter 4, the experience curve confuses a number of distinct effects that will occur as a firm increases production. And, although the experience curve serves as a good aggregate forecasting tool and is simple to use, one would be hard pressed to argue that it should be the firm's sole means of understanding the dynamic of its cost position over time. In most cases, we are looking at deliberate investments on the firm's part for cost reduction in any form. Depending on the technology, we might be looking at yield improvement, process redesign, or scale effects. Suppose you are a manager with a series of cost elements in producing an item. Some of them do not come down through increased production, so you start redesigning the product to get rid of them. There are classic techniques of industrial engineering value analysis—for example, product redesign to shift away from steel to plastics—which are all part of this process. Trying to disaggregate those and saying 'this much of the reduction was due to learning and this much to scale and this much to the substitution of capital for labour, and so on' is probably analytically beyond us in most cases but can, at times, prove to be a fruitful exercise.

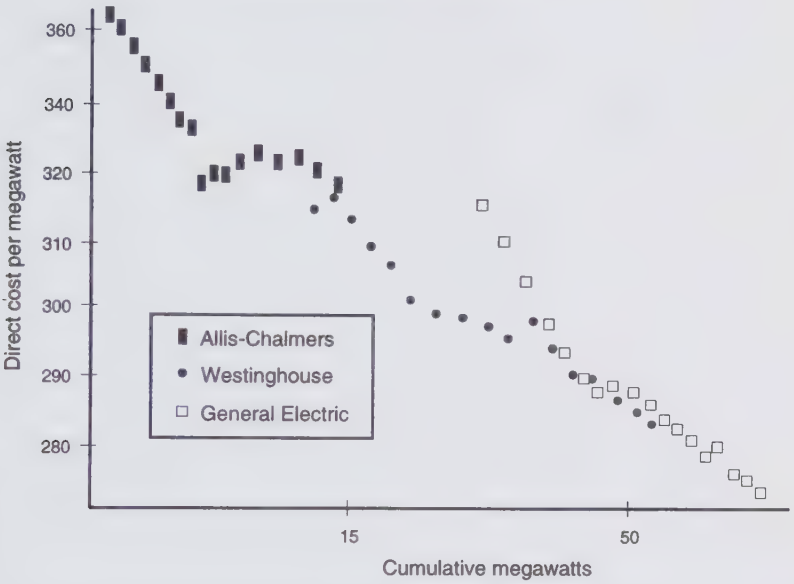
Case 6.3 Allis-Chalmers up against the experience curve

In the mid-1960s there were three major producers of heavy electrical equipment in the US: General Electric, Westinghouse and Allis-Chalmers. Each produced a variety of heavy equipment but all were involved in the production of steam turbine generators.

There have been continuous changes in turbine generator technology in the post-war period. In the early 1950s, newly installed generators might have been 100 megawatts each. They have been getting bigger with improvements in machinery and metallurgy so, if we are to look for experience curves, we need to find some way to standardise across a gradually evolving product. Consider the view that an electric utility did not care about the size of a turbine generator—rather, it was concerned about the generation of electricity. Therefore, it would only buy bigger generators if, in terms of their capacity to deliver electricity, they lowered cost per megawatt. So the unit whose cost behaviour we should study is not a physical generator but a generating capacity of some fixed amount—say one megawatt. Then we are interested in whether the cost to produce a megawatt of steam turbine generator capacity increases or decreases with experience.

For each of the three firms, their year-by-year per megawatt direct costs to produce steam turbine generators are shown in the graph on the next page. For

Direct cost—steam turbine generators (1946–63)



each firm, the leftmost point is for 1946 and the rightmost point for 1963. The plot gives clear evidence of persistent cost differentials between the three that are consistent with long-term differences in their market share and their experience.

Project yourself into the role of management at Allis-Chalmers. Does it make sense to stay in your present position? If not, what are your options? What would General Electric do, based on your actions?

Your first move might be to put a team to work, the best engineers you have, purchasing people, financial specialists and so on, to analyse your position and that of your competitors. They come back and report that they have looked at everything known about General Electric's technology, product design, customer requirements, machine tools, design parameters and so on, as well as your own, and the analysis of your respective cost positions. What do you do? Remember that over this whole period these products are continuously evolving. In all the firms there are design teams from engineering, metallurgy and other departments working away continuously improving the size, reliability and efficiency. This is not a static technology. Do you keep on doing what you have been doing? Or perhaps try some other business?

Look at the returns the firm has been getting. The estimate shown in the table on the next page is that over a period of eighteen years you have made a net operating loss of significant size. It has not been a wildly exciting business venture. But that is hardly surprising if you think about who sets the price and where.

You know that in head-to-head competition you are always going to have

Costs and market share in steam turbine generators

	General Electric	Westinghouse	Allis-Chalmers
Percent of sales:			
Direct cost	64.4%	72.4%	81.0%
Overhead	16.2%	23.5%	29.3%
Operating profit	20.0%	3.8%	-8.7
Backlog	2.5 years	2.3 years	1.6 years
Share of orders (mw)	60.8%	31.4%	6.7%

higher costs. So, what strategic options do you have? The first might be to increase market share, in other words, to attempt to eliminate the cost disadvantage. Option number two is to get out. Option number three is find some way to redefine the business by segmenting or differentiating your product so that you are no longer playing in a game that you don't find very pleasant.

What are the odds of success with the first option? By 1905, General Electric had 60 per cent of this business, with Westinghouse number two. General Electric has maintained that position ever since. Most of the chief executives of General Electric had, at some time, run the turbine generator business. It is not a business of which its top management is unaware. So the chance that a high-cost, marginal competitor can find some means by which to significantly gain market share at the leader's expense is quite remote.

Consider what causes the cost differential of roughly 20 per cent between General Electric and Allis-Chalmers. Is it anything Allis-Chalmers does not know? An interesting aspect of this situation is that there may not be any proprietary technology. Nothing need be hidden from the other firms. If a firm makes six times more turbines than its competitor, what are the implications for castings, machinery, choice of tools, engineering costs and so on? Clearly, the high-volume competitor has real scale advantage for these aspects of the production process. General Electric does not need anything proprietary to get that cost differential and to maintain it indefinitely. Another interesting point is that General Electric not only made a lot of money, but its managers also had a much better life. If you are the general manager of the division, or marketing manager, or production planning controller and you have typically a two and a half year backlog of orders and your competitor has a year and a half, then your life feels very easy and predictable by comparison with the competitor. So the people at Allis-Chalmers probably worked twice as hard. They would be concerned most of the time at having only a year and a half backlog for this kind of heavy engineering work.

The other option for Allis-Chalmers, if it wanted to stay in the business, was to find an effective form of differentiation. The main form of segmentation that was available in that market was size segmentation. Because General Electric was at the forefront of the technology, it was producing the new generations of large turbine generators. Allis-Chalmers was limping behind with the little ones sold to the Rural Electric Authorities. Even though these people were found guilty of being in a price fixing cartel it is quite arguable that they were not. General Electric seems to have been running a brilliant strategy in which, amongst other things, they raised the margins on the big items and lowered the margins on the little ones. If you are controlling the leading edge of the technology and tilt the price slope, you punish your competitor in the segment on which it depends. So Allis-Chalmers had to find a segment that they could defend and for which they would be low cost. If you make that double test, it is not clear that there was any opportunity for Allis-Chalmers.

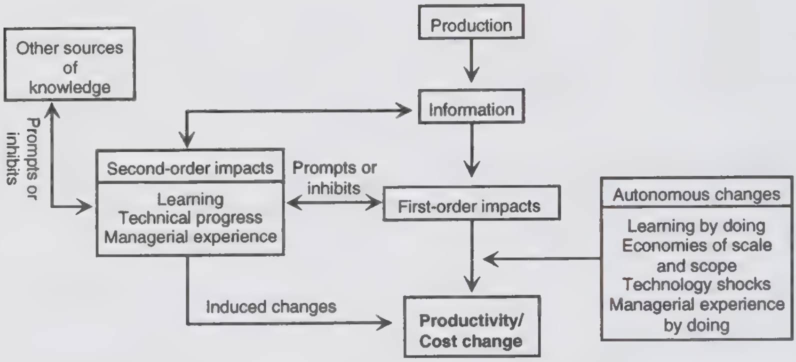
They did, in fact, get out of the business and then re-entered seven or eight years later in a joint venture with Siemens, which is either a moral on the power of foreign technology or demonstrates that 'some people never learn'!

Source: Adapted from R. Sultan, *Pricing in the Electrical Oligopoly*, Cambridge MA: Harvard University Press, 1958.

The total cost dynamic

Reality does not break cost down into nice discrete chunks and it is difficult to disassemble the behaviour of cost into the learning and technical progress. However, we can conceptually think about a process which allows us to look on cost and productivity improvements as having three parts, all of which interact, and two dimensions, which relate to the degree of firm control over these parts. Learning focuses our attention on labour- and organisation-based improvements in productivity. Technical progress focuses our attention on capital-based improvements such as those arising from R&D and product development. Historically, experience effects have been viewed as a mixture of these effects. We suggest, however, that a more useful way of thinking about experience is to use it to account for the residual cost and productivity effects that cannot be attributed to either direct labour or capital improvements. An example of this logic can be seen in a study by Gruber.[9] In his dissertation at the London School of Economics he analysed the determinants of cost reductions in memory chip production and found some interesting results. Most pundits thought that memory chips were subject to dramatic experience effects, mostly due to learning. What Gruber discovered was that different semiconductors have different dynamic cost drivers. In the case of erasable programmable read only memories (EPROMs), learning is the only real determinant of cost. In the case of dynamic random access memories (DRAMs), economies of scale and generational jumps in technology are important. In the case of static random access memories (SRAMs), only generational shifts in technology are important. Once these drivers are accounted for, there is no residual impact of 'cumulative experience' on production cost.

Figure 6.9: Autonomous and induced changes in the productivity and cost improvement process


Production
Other sources of knowledge
Information
Prompts or inhibits
Second-order impacts
Learning
Technical progress
Managerial experience
Prompts or inhibits
First-order impacts
Autonomous changes
Learning by doing
Economies of scale and scope
Technology shocks
Managerial experience by doing
Induced changes
Productivity/ Cost change

Source: Adapted from P. Adler and K. Clark, 'Behind the learning curve: a sketch of the learning process', *Management Science*, 37, March 1991, 267–81.

Going back to our initial model of cost dynamics, we can now alter the logic somewhat to account for our discussion (see figure 6.9). Second-order effects are now thought of as being driven by learning, technical progress and managerial experience. First-order effects are viewed as driven by scale and scope economies and autonomous sources of learning, technology and managerial experience.

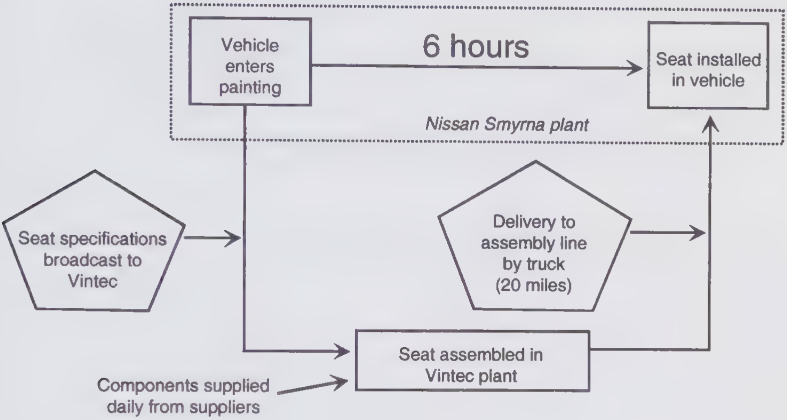
Time-based competition and cost determination

As noted in chapter 5, TBC serves as a useful reminder of the linkage between innovation and innovation processes and manufacturing processes. At a higher level, TBC can be considered the philosophical precursor of the quality revolution because of its insistence that an activity be done correctly and rapidly the first time. From a cost perspective, TBC pinpoints our attention on the value-delaying, and hence cost-increasing, activities in the customer value delivery process. The key to developing speed, quality and variety simultaneously lies in three simple and interrelated questions:

- Which processes are necessary to satisfy the customer's value?
- Which processes can be compressed?
- Which processes can be conducted simultaneously?

The first question forces us to concentrate only on those activities that have

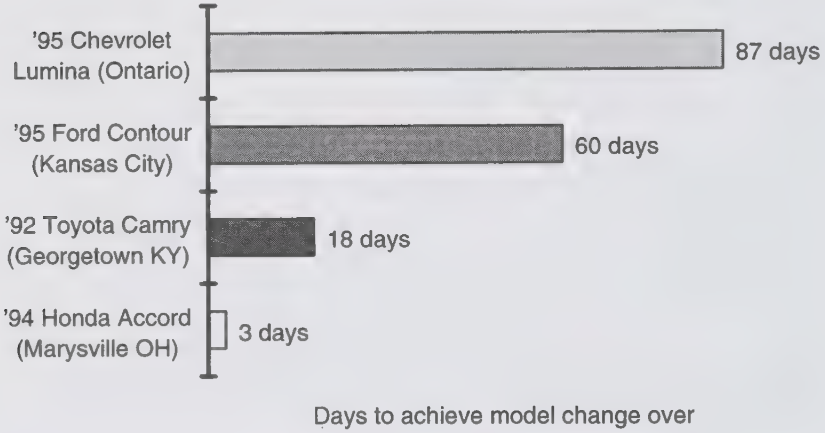
Figure 6.10: JIT supply chain at Vintec-Nissan


Vehicle enters painting
6 hours
Seat installed in vehicle
Nissan Smyrna plant
Seat specifications broadcast to Vintec
Delivery to assembly line by truck (20 miles)
Seat assembled in Vintec plant
Components supplied daily from suppliers

relevance to satisfying a recognised consumer need and reduce the clutter of unnecessary processes. Reduction of wasted time is the quickest and cheapest way to increase speed and quality since it reduces complexity without having to work employees harder or requiring increased capital investment. Also, it should be remembered that manufacturing is only one step in the customer valuation process and it is important to address wasteful activity all along the value chain. For example, traditional supplier distribution systems are sequential, relying on orders being taken well in advance of delivery. The problem with this system is three-fold. First, such long order times lead to cycles in the inventory system where the company can have problems of too much or too little inventory. Second, the level of inventory, on average, will be high, leading to high inventory holding costs. Third, such long lead times force the downstream operators to forecast too far ahead, leading to larger forecast errors and hence higher inventory. Figure 6.10 presents a simple schematic of the process used by Nissan's Smyrna Tennessee plant and its seat supplier. This is a classic just-in-time (JIT) system with the order to delivery time being a short six hours. Neither Nissan nor Vintec hold any inventory of seats nor do they need to forecast more than a few hours ahead. Vintec achieves more than 200 inventory turns per year by: (1) becoming an extension of their customer's factory, (2) manufacturing only to order, (3) using manufacturing cells dedicated to a specific automobile model and (4) using daily shipments of components from suppliers. Vintec boasts that they 'empty the plant every day'.

The second question focuses our attention on the internal workings of single processes by asking: which processes can be compressed? Time compression is

Figure 6.11: Model change-over times in motor car manufacturing



Source: J. Treece, 'Motown's struggle to shift on the fly', *Business Week*, 11 July 1994, 102–3.

achieved typically by addressing the five value delaying activities we mentioned in chapter 5: jobs waiting behind queues, jobs being moved to new queues, inspections, change-overs or rework. Of these the most critical appears to be reduction in set-up or change-over time since queues are invariably driven by set-up requirements. Figure 6.11 provides an example of the evolution of model change-over times for American motor car manufacturers. As can be seen, although they have improved over the years, they still lag behind their Japanese rivals quite substantially—evidence of the fundamentally competitive, versus comparative, advantage of such time-based activities. An argument that is supported by the finding in table 6.1 showing that 48 per cent of the cost differences between Ford and GM plants was in the amorphous area of 'factory practices'.

The third question deals with the ordering of activities. Ever since the industrial revolution and Henry Ford in particular, manufacturing has traditionally been ordered around a series of sequential processes. The TBC revolution changed that. Today's flexible manufacturing systems stress simultaneity and flexibility of process. Three elements are important to determining the sequencing of activities in the value delivering process: must the process be done on-line or off-line? must the process be ordered sequentially?

and is the activity internal or external to the process? Figure 6.12 provides an example of a successful change in the ordering of activities in the leather-cutting operations of ACME Boot Company. Note that the old process was sequential with all activities being on-line. The new system moves three of the early activities off-line thereby eliminating their time from the cutting process itself. The last two activities are done internally (that is, they are part of the sequential process). This simple change reduced the time to completion of cutting activity from 22.9 minutes to 6.4 minutes, a 72 per cent improvement!

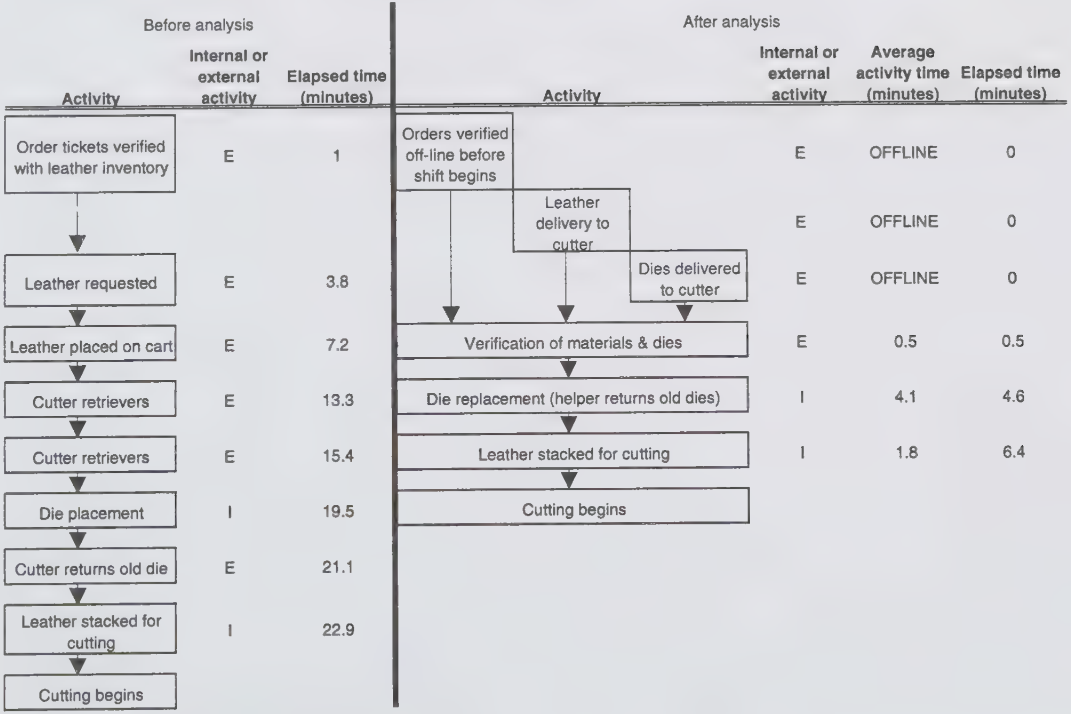
Strategy and cost position

The path to developing an effective cost leadership strategy is understanding that it does not begin with cost but with the company's underlying assets and competencies. Cost leadership follows from the purposeful decisions made surrounding the company's business processes and asset development. In this sense, a cost-based strategy is not independent of the other strategies that a company may choose to use. For example, our discussion of variety-based competition in chapter 4 highlights how many companies have been able to achieve cost leadership at the same time as rapidly increasing their innovative potential. Therefore, any strategy based on having lower costs than one's rivals will be least effective when it is pursued alone. The most effective cost-based strategy is one that is developed in conjunction with innovation, segmentation, and flexible business processes aimed at effective asset development and utilisation. This appears to be the case in the growth of Compaq as the number one personal computer manufacturer in the world (see Case 6.4). Compaq diligently mixed product development with a ruthless but rational approach to its own business and production processes.

There are consistencies in the effectiveness of a cost-based strategy that are important to note. Let us begin with the benefits of cost leadership as one of the prongs of a company's overall corporate strategy.

- Cost leadership protects the company from price wars since its position is sufficiently credible that rivals are unlikely to win and, therefore, unlikely to instigate a price war. Alternatively, *cost leaders have greater flexibility in the use of price as a competitive weapon.* According to the *Economist*, Compaq has built a 25 per cent price buffer into its cost system that gives it the luxury of meeting rivals' price cuts or instituting its own price reductions when they are felt to be strategically important.
- *Companies with strong cost positions are able to continuously earn profits during industry restructuring and downturns.* They are thereby better positioned once such events have run their course. Compaq again serves as an example of

Figure 6.12: Reducing set-up time for leather cutting at ACME Boots



Before analysis

Activity	Internal or external activity	Elapsed time (minutes)
Order tickets verified with leather inventory	E	1
Leather requested	E	3.8
Leather placed on cart	E	7.2
Cutter retrievers	E	13.3
Cutter retrievers	E	15.4
Die placement	I	19.5
Cutter returns old die	E	21.1
Leather stacked for cutting	I	22.9
Cutting begins		

After analysis

Activity	Internal or external activity	Average activity time (minutes)	Elapsed time (minutes)
Orders verified off-line before shift begins	E	OFFLINE	0
Leather delivery to cutter	E	OFFLINE	0
Dies delivered to cutter	E	OFFLINE	0
Verification of materials & dies	E	0.5	0.5
Die replacement (helper returns old dies)	I	4.1	4.6
Leather stacked for cutting	I	1.8	6.4
Cutting begins			

this phenomenon. While other computer manufacturers were spilling red ink, Compaq weathered the turbulent early 1990s with increasing profits despite declining prices.

- *Companies possessing cost leadership are better protected from price scissors*—the phenomenon of declining selling prices and rising supplier prices. They are, therefore, less likely to be forced to exit a market.
- Cost leaders are better able to position themselves against new or potential entrants. *Cost leadership can be a barrier to entry.*
- *Cost leadership based on asset strength can be transferred.* Cost leadership is not a one-product or one-market deal. The nature of learning is such that it has the potential to be used across markets and products, in other words, it can be a public good if used correctly. Nestlé's research and development facilities across the globe are very much aimed at taking advantage of local expertise. However, its core R&D strength lies in its ability to transfer knowledge and techniques from one facility to another and to integrate knowledge from a host of sources into different products.

The benefits of a cost leadership strategy are seen in our steam turbine generator case. By 1963, Allis-Chalmers reached roughly the cost position that Westinghouse had achieved back in 1947–48. It took Westinghouse until 1963 to catch up to where General Electric had been ten years before. In both examples, the persistence of General Electric's cost leadership position bestowed upon it the added luxury of accommodating or not accommodating the entry or pricing actions of its rivals. As the US Justice Department was to argue, General Electric didn't need to use its position to dominate the market. The sheer knowledge that it could do so was enough.

Nevertheless, the General Electric case is probably something of an exception. Strategies based on cost leadership can have limitations if not pursued wisely.

- *Cost leadership is sometimes an 'all or nothing' strategy.* George Stalk[10] points out how many Japanese companies viewed time-based competition (TBC) as a stand-alone strategy and ultimately failed strategically. Their error was to compete on time and cost rather than using TBC wisely to segment the market and block competitive inroads by rivals.
- *Cost leadership based on slash and burn tactics can denude a company of valuable assets that may not be replaceable.* Woolworths embarked on a cost-cutting program in the late 1980s that was aimed at making the company the industry leader. It could have followed Coles-Myer's strategy of reducing its work force dramatically. Rather, it focused on reducing corporate overheads and not critical staff at the customer level. Woolworths' corporate headquarters staff was reduced from 450 to 50 people. Critical personnel were relocated

closer to customers while some areas of the corporate centre were completely shut down, for example public relations. Woolworths' strategy was successful because its focus was not on cost reduction but on customer value creation.

- *Corporate focus on cost position can reduce the company's ability to compete on other dimensions.* For example, during the late 1970s and early 1980s many American motor car manufacturers became fixated on the need to meet Japanese productivity and cost benchmarks. Although there were some positives to this orientation, it led many American companies to concentrate too much on cost reductions and not enough on the quality and variety of the products being produced.
- *Cost gains can be easily duplicated.* Many people argue that the most tenuous position a company can be in is one based on cost differences. For example, in most industries, followers do not have to retrace the whole experience curve carved out by the leader. Much of the technology and knowledge in an industry is not proprietary. Firms using capital equipment—whether presses, computers or refineries—commonly buy them from specialist suppliers. And, in general, up-to-date equipment is available to all competitors in an industry. Cost-reducing design changes instituted by one competitor can often be copied by others. People move between firms, carrying with them detailed knowledge of the techniques and processes used by their old employer.

Case 6.4 The fall and rise of Compaq

Compaq Computer recently pushed aside both IBM and Apple Computer to become the world's biggest personal computer maker, with a 9.5 per cent share of the world market by volume. Compaq has achieved this through aggressive price cutting and is now positioning itself to compete in the market for mainframe computers.

Compaq at first ignored the trend towards cheap, basic PCs. The company was forced to change course after 1991, when the firm's sales fell by 9 per cent to $3.3 billion and its net profit fell by 71 per cent to $131 million. Rod Canion, Compaq's founder and chief executive, lost his job and Eckhard Pfeiffer, the company's chief operating officer, took charge.

Compaq began to wage brutal brand warfare, slashing costs and prices and using its brand name to build market share. The offensive was launched in 1992, when Compaq caught its competitors off guard with a range of PCs that were sold for one-third the price of their predecessors. Since then, Compaq has cut its prices at an annual rate of almost 30 per cent. As rivals such as Apple and IBM have struggled to keep pace, their profits have shrunk. But even though Compaq's gross profit margin has fallen from 43 per cent of sales in 1990 to 27 per cent in the first quarter of 1994, its net profit has soared because of volume increases.

Compaq has been increasing output to meet demand, while trying to find ways to run its factories more intensively. In 1993, its Houston factory ran for 60 hours a week. It now operates 24 hours a day, every day. Houston used to have six production lines occupying 3 million square feet; now thirteen lines are packed into 2.4 million square feet.

Compaq has also made use of the most modern management techniques. It has been re-engineering its production processes with the help of management consultants such as McKinsey and CSC Index. Thanks to 'design-for-manufacturing' techniques, such as common components and snap together construction, its big computer 'servers' now use one-third fewer parts and screws than they did in 1989. It has introduced 'activity-based costing', an accounting technique that has allowed Compaq to apportion overheads accurately to individual products. Compaq's sales force, which is a third smaller than it was in 1991, works mostly from home, to save on office costs. Compaq has also put pressure on its suppliers to cut their costs and to facilitate just-in-time delivery, to save on warehousing components.

The net result has been that Compaq's combined labour and overhead costs per computer have fallen by an astonishing 75 per cent over the past two years. Labour now accounts for as little as 2 per cent of some of its products' total costs. Each of Compaq's 10,500 employees accounted for an average of $716,000 in sales last year, up from $305,000 in 1991. This translates into $1.5 million of revenue per manufacturing employee. According to Compaq's manager of product integrity, 'We can make computers cheaper than anyone else in the world.'

Compaq has shrunk its product life cycle to just nine months, and has designed into each product the potential for a 25 per cent price reduction during its life cycle. If competitors undercut a new product, Compaq can lower prices in retaliation and still make money. Compaq expects to keep cutting both costs and prices by 15–20 per cent a year.

Compaq now wants to apply the same strategy to other markets, in particular, the market for mainframes. It has already started coming out with computers that undercut the prices of competitors such as IBM and Digital by 80 per cent. Compaq still needs to overcome its image as just a PC-maker, however. Compaq is also developing an interest in multimedia and related software, through ventures with Microsoft and other software companies.

The greatest risk faced by Compaq is overextending itself. As demand has raced ahead of supply, Compaq has had difficulty supplying existing models and avoiding lengthy delays between the demise of old products and the arrival of new ones. Customers have had to contend with delays of two months or more. Some customers also complain that Compaq is making its PCs obsolete too swiftly and that its sales and service support can be lax. The result is lost sales.

Compaq is rethinking everything from its manufacturing operations to supply logistics in an effort to solve the problems. The firm has also reconsidered its priorities, placing greater emphasis on availability rather than quality. The company cannot afford to slip on supply again.

Source: Adapted from 'The Texas computer massacre', *Economist*, 2 July 1994.

Summary—the role of cost in competitive strategy

In this chapter we have explored the potential for competitive advantage based on cost position. The evidence suggests that, in many businesses, significant cost differentials exist and are sustainable over time. The actual extent of the cost advantage is not predictable *a priori*, nor are there any simple prescriptions for building a cost advantage. However, if there is a first guiding principle, it is that sustainable cost leadership is driven not by seeking cost leadership but by seeking the most sustainable utilisation of assets. This requires building an asset base that is unique but flexible and grows and renews itself through natural experimentation. Volvo learned by experimenting and keeping its eyes open. It got the most from its lessons by trying them in new locations and with different products.

If there is a second guiding principle, it is that even the most apparently sustainable cost advantages are not naturally sustainable. New technologies and new business processes always imply an opportunity for rivals to supplant the cost leader. Changing customer demand creates pressure for change that is sometimes antithetical to maintaining one's cost position. Yet, such pressures must be responded to. Hanging on to a strategy based on a cost and not a customer orientation is simply not sustainable. Finally, no amount of learning, experience or technical progress is forever proprietary. What rivals cannot do themselves they can learn in other ways. Companies must sell their products, which implies that reverse engineering will reveal product design secrets. Employees are not prisoners and will move from company to company taking their learning and experience with them (and sometimes more!). And with the exception of some privately held companies, directors must reveal information to owners, regulators and the media. Smart competitors are always watching and listening. Corporations do not operate in a vacuum and the same interactions that allow a company to learn from its environment imply that it must release information into that environment.

Chapter 7

Strategic market segmentation

He who attempts to defend everywhere defends nothing.

Frederick II (1712–1786)

If pursued correctly, a strategy based on segmentation allows a company to serve its customers more efficiently and receive higher effective prices. At the same time, it allows a company to preclude the entry of competitors through the strategic locking-in of important customer groups. Market segmentation is the key concept underlying a firm's marketing strategy and the resource allocations that must be made to implement marketing programs. From a production standpoint, it is strongly related to time- and variety-based competition.

To realise the potential benefits of segmenting markets, however, requires management acceptance of the concept, an empirical study of the needs and wants of customers, and management systems that align business processes and tasks to these needs and wants. The use of market segmentation by the ABB Electric Company, described in Case 7.1, provides an excellent example of the rewards from incorporating market segmentation as a fundamental platform of the company's competitive strategy.

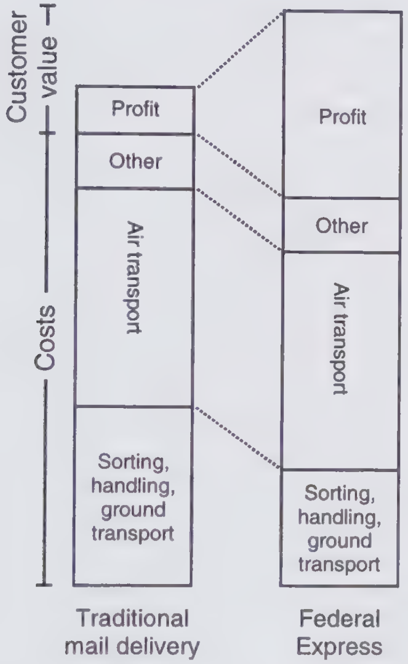
The concept of market segmentation can be an elusive phenomenon to pin down. To a sales force manager, the word segmentation means geographically partitioning a market in order to allocate territories to the sales force. In other cases, managers talk about breaking down the market into clusters of demographic, socio-economic or preference groups; the female segment of beer drinkers, the segment of people who buy margarine in preference to butter, or the brand loyal diet soft drink segment. But these examples reflect only the *operational* side of the segmentation debate.

Strategically, market segmentation is one of the primary ways in which a firm can search for a market opportunity and/or build a sustainable competitive advantage. A firm can be pursuing a segmentation strategy whilst servicing only one segment of the market or by servicing all segments of the market. The key to successful market segmentation is recognising the subdivisions that either naturally exist in the market or can be created within the market and appropriately aligning the company's business processes and resources to most efficiently satisfy those segments that best fit with the firm's advantages.

Figure 7.1 provides an example of how Federal Express reconstructed the package delivery service by using a segmentation-based strategy. Federal Express built its original strategy on two pillars.[1] The first pillar was the cost efficiency that could be achieved by focusing exclusively on overnight express packages. This allowed the company to design a freight-handling system that achieved lower costs in handling, sorting and ground transportation. In many respects, this was the true source of its initial competitive advantage. Accompanying this strategy was a customer value proposition that matched its production system with a specific type of clientele that put a premium on speedy delivery. Note the difference between the Federal Express strategy and traditional mail delivery. Because the postal system was servicing all segments, it treated them equally, which forced it to bear higher effective costs and charge lower effective prices. It is also enlightening to examine Federal Express's evolution. It had started out as a niche player satisfying one very distinctive segment in a weakly segmented market. Over time, as its market segment grew, it began sub-segmenting these customers by providing even more specialised services to distinct customer categories, thereby cementing its advantage vis-a-vis its rivals.

To achieve maximum strategic advantage from a segmentation strategy, as well as understanding how to operationally segment a market efficiently, one needs to understand the logic behind the type of segmentation strategy that is appropriate under various circumstances. This is the topic of the next section. Following this, the focus of this chapter shifts to a discussion of product/market fit, or target segment selection. That is, do the core competencies of the organisation fit the opportunities presented by various segments of the market? The chapter concludes by discussing some of the options a company can use to position its products to enhance their attractiveness to customers. The framework used to integrate the process of strategic market segmentation is called STP—segmentation, targeting and positioning.[2]

Figure 7.1: Federal Express and traditional mail delivery


Customer value
Costs
Profit
Other
Air transport
Sorting, handling, ground transport
Traditional mail delivery
Profit
Other
Air transport
Sorting, handling, ground transport
Federal Express

Source: A. Rowe, R. Mason and K. Dickel, *Strategic Management: A Methodological Approach*, Reading MA: Addison-Wesley, 1993.

Case 7.1 ABB Electric—achieving the fruits of segmentation

In its third year of existence, ABB Electric of Wisconsin faced a 50 per cent drop in total industry sales. The company sold medium-sized power transformers, breakers, switchgear, relays and other electrical equipment to power utilities in the North American market. As a new firm in an industry dominated by General Electric, Westinghouse and McGraw-Edison, ABB had to find a way to win customers from these major competitors or it would go out of business.

In 1974, ABB engaged the services of a University of Wisconsin Professor, Denis Gensch, to upgrade its information and insight about its customers. Gensch used customer research and consumer choice models to better understand customer preferences and the customer decision-making process. He then helped ABB to segment their market and design new products and a service program to better fit target customer needs.

One of the first marketing actions ABB took was to offer a full five-year warranty on all its products. The best competitors were offering was a one-year

Segmentation characteristics for ABB (5 = most important)

	Relative importance of attribute
Invoice price	2.13
Energy losses	4.60
Appearance	2.67
Availability of spare parts	1.51
Clarity of bid document	1.00
Knowledgeable salesmen	1.72
Maintenance requirements	1.63
Warranty	5.07

warranty. In order to develop the quality products required by such a warranty, ABB used more management science models, this time in the design and manufacturing areas. Over the years, these models integrated customer needs, product design and manufacturing into a flexible manufacturing system which provided the acknowledged highest quality electrical control system in the industry. These management science models also enabled ABB to become the low-cost producer in the industry.

At the heart of ABB's success was the insight it gained into its customers and how to target its products and services. First, Gensch and ABB isolated the eight to ten attributes that customers used to select among alternative suppliers. (See the table above.) These were then used to predict past choice behaviour, and to form segments of customers who valued different combinations of these attributes differently. Four such segments were revealed—ABB Loyal, Competitive (ABB customers who might switch), Switchable (competitors' customers who might switch) and Competitor's Loyal. Different marketing campaigns were developed for each segment which took into account the strengths and weaknesses of the major competitors in each segment.

By 1988, in a market which continued to decline, many of ABB's competitors had left the market. In contrast, ABB's market share rose from 2 per cent in 1971 to 40 per cent in 1988, with sales per employee of $207,000 against an industry average of $128,000.

Source: D. Gensch, N. Aversa and S. Moore, 'A choice modeling market information system that enabled ABB Electric to expand its market share', *Interfaces*, 20, January/February 1990, 6–25.

The logic of market segmentation

Before moving on to the operational side of market segmentation it is important to get a quick understanding of where there is strategic advantage in pursuing a segmentation strategy. To do this let us use a very simple, but realistic, formulation:

- customers are heterogeneous in their preferences;
- customers value a product according to its characteristics; and
- production cost is driven by the nature of the product's characteristics.

With this in mind, we can ask the question: when will a segmentation strategy dominate a full market coverage strategy? Assume that customers will switch between producers when they receive a higher net value for the product provided. Therefore, if I provide a product to customer group A with characteristics X at a price P_X, the customer's net value is $V_A(X) - P_X$. Suppose that a competitor provides an alternative product with inferior characteristics Y at a price P_Y where $P_Y < P_X$. The customer's net value is $V_A(Y) - P_Y$. Customers will only purchase product Y when $V_A(Y) - P_Y > V_A(X) - P_X$, but since the price of Y is lower, the additional value provided by the better product characteristics must be more valued than the price difference; that is, $V_A(X) - V_A(Y) > P_X - P_Y$. We, therefore, have one condition under which segmentation will prove valuable—customers perceive the product better tailored to their needs to be worth the price difference.

However, we have said nothing about the nature of the cost underlying the production of the product characteristics nor have we said anything about the nature of the customer groups. In our prior example, if the cost of producing product X was lower than the cost of producing product Y, then X would always dominate Y since Y can never profitably undercut P_X. Now suppose that customer group A preferred product X and customer group B preferred product Y (however, both products provide both customer groups with some value). The relevant comparisons now become whether $V_A(X) - P_X$ is greater or less than $V_A(Y) - P_Y$ *and* whether $V_B(X) - P_X$ is greater or less than $V_B(Y) - P_Y$. The interesting point of this example is how the existence of multiple segments constrains the prices that can be charged to the two segments. For the segmentation strategy to work $V_A(X) - V_A(Y) > P_X - P_Y$ and $V_B(Y) - V_B(X) > P_Y - P_X$. Note the dilemma this creates. Producers can choose a pure segmentation strategy by setting $P_X = V_A(X)$ and $P_Y = V_B(Y)$. This ensures that customer group A buys product X and customer group B buys product Y. However, it is conceivable that the costs of producing the different products are quite different as is the volume of customers demanding the two products. This can lead to a set of circumstances where the price of one of the products is lowered to the point where all customers buy that product. It should also be clear that this set of circumstances is most likely in an environment where economies of scale are dominant so that the price can be lowered below the customers' threshold for accepting the 'less preferred' product. An additional complication is added if we allow for more direct competition in the segments, thereby forcing prices down and creating a further blurring of the segment boundaries.

The prior two examples abstracted away from the role that cost position plays in segmentation strategy. The last example clearly shows that when economies of scale dominate, segmentation strategies are normally put under extreme pressure unless customers value specialisation so highly that the cost advantage cannot be brought to bear on the decision. Under most normal circumstances, firms base their segmentation strategy not on economies of scale but on the economies of focus and economies of scope. *Economies of focus* (EOF) imply that small-scale specialised operations are lower cost than more generic products and services. Such EOF arise not because of production efficiencies as we normally think of them but because of the efficiencies that arise based on having a narrower product range—such as fewer distributor types, focused advertising, fewer product returns and so on. EOF imply lower minimum efficient firm scale and clearly provide a niche within which specialised firms can dominate larger rivals with a specialised segmentation strategy. Federal Express's initial niche strategy was based partially on the EOF associated with a specialist express package service. Economies of scope (EOSc) provide a distinctive advantage to larger firms pursuing multiple segment strategies since they imply lower costs against single product competitors (provided they lack EOF). The advantage of EOSc are clearly based on the fact that the production portfolio allows the multi-segment strategy being pursued to survive against individual segment onslaughts. Case 7.2 provides a more detailed description of this phenomenon.

This discussion gives a short introduction to the strategic logic behind the role of segmentation in developing competitive advantage. We can summarise the implications as follows.

- Segmentation strategies are more likely the greater the differences in the value customers place on different product configurations.
- Segmentation strategies are more likely when distinctive heterogeneous clusters of homogeneous customers exist.
- Segmentation strategies are more successful when EOS do not play as great a role as either EOF or EOSc.

Case 7.2 The average cost pricing trap

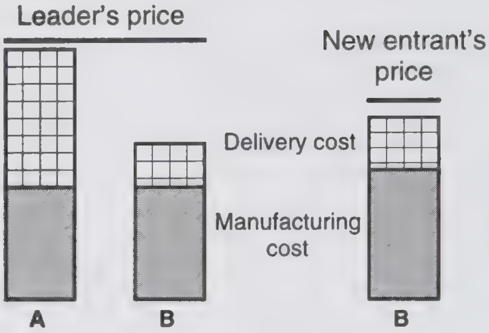
Consider a firm whose managers regard its customers as homogeneous. They make and sell one product for which they compute a manufacturing cost. There are also activities external to the factory, such as advertising, physical distribution and selling functions. For this simple example, we will aggregate all these non-factory costs and call them delivery costs. On the basis of average manufacturing and delivery costs, the firm sets a price that provides a good margin. The business is profitable and life not difficult. There is no competition, so the firm does not bother to break down its costs by customer group. However, it happens that there are two significantly different groups of customers, A and B. One of them (B) costs much less to service than the other. The firm's managers might be aware of this fact, and the salespeople would certainly know it, but the firm accepts it as simply a natural characteristic of its business.

Then a competitor enters the market. We assume that there is some experience advantage, so that the new competitor's base manufacturing cost is higher than that of the established firm. The initial company is the low-cost producer and could be the low-cost supplier to *both* segments. The new entrant's market entry strategy focuses only on customers of type B. It builds a specialised delivery system and sets its price below that of the older firm. Depending on how disguised this action is, it can become very frustrating for the established firm. Its managers are aware that their competitor must be incurring higher manufacturing costs than they are, and yet the competitor is selling at lower prices. (The figure on the next page shows prices and cost components for the two firms and for customer segments A and B.)

Quite often there is a failure to perceive the true strategy being pursued by the new entrant. It is likely to be accused of price-cutting but without a recognition of the systematic way in which that is being done. Often the defensive firm will bear the loss of market share, waiting for its new opponent to eventually pay the cost of its folly. Yet the new competitor is not unconcerned with profit. It has segmented the market and set out to capture that part of the market that is low cost to serve. In so doing, it has tailored its system to that purpose.

With such a scenario, we might wonder what outcome is likely? If the first firm does nothing, it will disproportionately lose segment B customers. In fact, if the new competitor is really smart, every time it is approached by a customer of type A it will refer that customer to the leader so that the leader keeps all the As and, over time, only loses the Bs. A well disciplined competitor would know not to serve group A. The leader's average costs rise because the customer mix changes in the most deleterious fashion. Soon it has a very difficult problem—its costs are going up and its margins are narrowing, which makes it extremely difficult to meet price competition from a rival that it knows is fundamentally a higher cost producer than it is. Has the new entrant found an enduring form of segmentation that gives it a long-run competitive advantage? Not really. The competitor is forced to gamble that the industry leader will hold a price umbrella long enough for the new entrant to gain the scale or the experience or whatever else is necessary to eliminate its underlying cost disadvantage. The new entrant is gambling on the length of time that the market leader will fail to understand what is happening, or to act as if the market is segmented.

Cost to service customer groups



If the established firm had realised and reacted quickly, it would have raised the price paid by segment A and cut the price paid by segment B to the point that the new entrant would find it unattractive to serve segment B.

Notice that there is no single, inevitable outcome of this scenario. If the original market leader responds promptly and prices according to segment cost, it can make the business very unattractive for the new entrant. Under those circumstances, and provided that the new entrant does not face large exit costs, the new entrant is likely to perceive its strategy as having failed and withdraw. However, if exit costs are large, as will be the case if the industry is capital intensive and its plant has little or no alternative uses, then the new entrant may stay and fight—something that would be expensive for both parties.

If the market leader responds very slowly, it may be entirely displaced by the new entrant. Alternatively, the new entrant may seek only to dominate the B segment, leaving the A segment for the original market leader. If, by focusing on either of those segments, it is possible to further reduce delivered cost to that segment, the two firms may establish a stable differentiation between them, with each concentrating on one segment and doing so profitably.

A supply and demand perspective on segmentation

Customers buy products and services for the benefits they provide, or to help them solve a particular problem that they have. Companies may sell products and services but consumers buy only the benefits or solutions to problems offered by these products. Benefits and solutions to problems can be of a *functional* (or economic in the case of industrial customers) and/or *psychological* nature. For example, Coke may quench your thirst (a functional solution to a problem) but for many people it also helps them to enhance their self-image (a psychological benefit). Diet Coke is targeted at those cola drinkers who want fewer calories for health (functional) or beauty (psychological) reasons. Coke sells a variety of colas (e.g., regular, cherry, diet, caffeine-free) to cater for the different desires of customers.

When we define a market segment in terms of the benefits and/or solutions to problems that customers buy, we adopt a *demand perspective.* This can lead to some novel and unexpected descriptions of the market for your product. Consider the case of the Polaroid camera company in the USA. Polaroid once commissioned a market research study to find out what cameras competed with their lowest priced instant camera. Pause for a moment and think about it. Which cameras compete with the cheapest model Polaroid instant camera?

What Polaroid found was that, if the customer was between 18 and 25 years of age, no cameras competed with the cheapest Polaroid camera. This group was in the market for entertainment, and they bought an instant camera to have some fun. If they did not buy a Polaroid, they spent their money on other types of amusement (e.g., going to a theme park). For this segment of customers, Polaroid was in the entertainment market, not the camera market!

Being in the camera market, or any other product market for that matter, usually means that the company has adopted a *supply perspective.* This supply-side approach to defining markets has traditionally focused on all the competitors who supply similar products and services (e.g., all the law firms or steel producers in a particular area). It explicitly considers manufacturing processes, cost structures, raw material availability, technology development and utilisation, marketing and distribution strategies, geographic scope, entry and exit costs, and so on. A market in this context is a competitive arena. It is easy to lose sight of customers when adopting this perspective. They often become volume or market share statistics rather than opportunities to buy products and services.

It is possible to explicitly consider the needs and wants of customers from the demand side and integrate them with the supply perspective using our simple resources–processes–customer values framework introduced in chapter 4. Remember that this logic requires us to: (1) *calculate* what a segment of customers values, (2) *create* value through the appropriate business processes, and (3) *claim* value by matching products and services to different segments.[3] Case 7.1 illustrated these principles. ABB first identified the product attributes that, when combined, provided a valuable product to its customers. (It *calculated* what customers valued.) These included factors like: the invoice price, warranty, appearance, spare parts availability and maintenance requirements. ABB found that its four customer segments (ABB loyal, competitive, switchable and competitor loyal) reacted differently to many of the product attributes and it began reconfiguring its products and services to meet the specific needs of each of these groups of customers. (It *created* value through its products.) Because the products were now tailored to meet the needs of specific customers, rather than some generic average customer, ABB was able to charge a value premium that was above the competition's price and still achieve market share increases. (It *claimed* value through its pricing policy.)

This thinking implies that the best segmentation strategy is the one based on the demand perspective. However, the most effective and profitable segmentation strategy will be the one that is: (1) best at recognising the customers' valuation process, (2) best at efficiently mapping the firm's business processes onto that valuation process, and (3) best at achieving commonality (i.e., economies of scope) in the firm's business processes across segments. This logic is exhibited in figure 7.2 as it relates to our resources–processes–customer values framework. Thus, the ideal segmentation strategy is one that achieves the greatest commonality in the usage of resources and processes in the achievement of satisfying different customer needs and wants. Therefore, in forming a segmentation strategy we are searching for differences between customers while simultaneously seeking synergy in production, distribution, human resources, technology and all other business resources and processes.

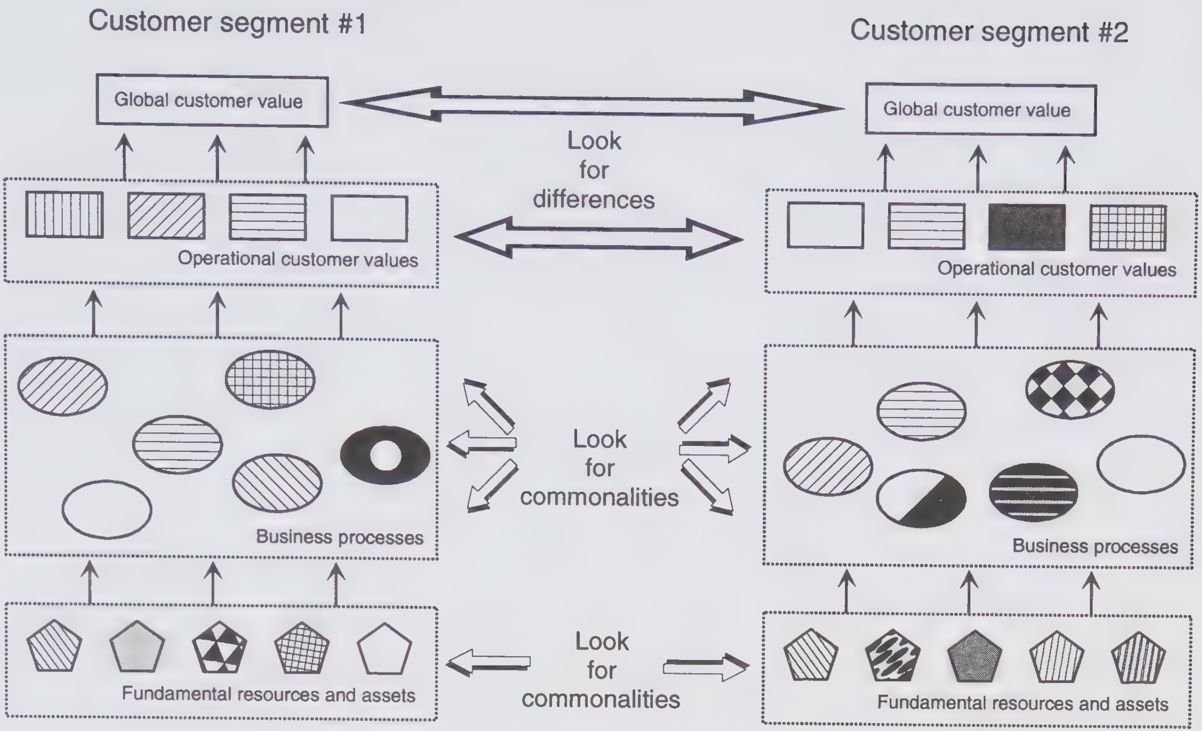
Segmentation as aggregation

If we take the demand perspective to the extreme, a firm could think of each customer as a segment of one. At the present time, the business and production processes of most companies make it much too costly to service such small segments. However, the notion of mass customisation is based on this very principle and it is the hallmark of time- and variety-based competition. For example, Panasonic Bicycle produces one-of-a-kind bicycles to customer specifications in 11,231,862 variations in 90 minutes. For Panasonic, each customer is a segment. It has aligned its products and production process in a manner that allows it to create custom products using standard production techniques.

Most segmentation strategies start by attempting to divide up the market; that is, they start with everyone in the pool and attempt to separate them based on some criteria. Using this logic, segmentation is market division. By focusing on segments of one, the process of market segmentation is one of customer accumulation. Rather than asking which customers differ (and why they differ), we want to know about the similarity of customers. For example, what is the reduction in customer value that we face when providing a set of customers with a similar product rather than an individually tailored product? What are the production economies we achieve by providing a similar product to a customer group rather than customised products to each customer?

In the end, both types of process should lead to a similar conclusion. However, the managerial focus and strategic logic is different, implying that, in practice, the different approaches often lead to different segmentation

Figure 7.2: The logic of optimal strategic segmentation


Customer segment #1
Customer segment #2
Global customer value
Global customer value
Look
for
differences
Operational customer values
Operational customer values
Look
for
commonalities
Business processes
Business processes
Look
for
commonalities
Fundamental resources and assets
Fundamental resources and assets

structures. The design of products that best fit the needs of particular customers provides more customer utility than designing a product to fit the average need. This extra customer utility may enable the manufacturer to charge a higher price for the customised products, and it may reduce competitive pressure by making it more difficult for other manufacturers to tailor better products to a segment's needs. Top (market) down processes tend to lead to segmentation structures that focus more heavily on the market as it currently is serviced. Bottom (customer) up processes will lead to results that are closer to customer valuation processes and will constantly be highlighting the true differences between customers.

The process of strategic market segmentation

Strategic market segmentation is best developed first from a customer perspective and then, when demand opportunities are identified, integrating competitive and supply factors. We adopt the following segmentation, targeting and positioning (STP) procedure:

Segmentation

First: Segment the market using demand variables (e.g., customer needs, wants, benefits sought, solutions to problems desired, usage situations, and so on).
Second: Describe the market segments identified using variables which help the firm to understand how to serve these customer needs (e.g., buyer switching costs, shopping patterns, geographic location, size of customer, spending power, price sensitivity, and so on*)*, and talk to customers (e.g., media preference and usage, attitudes, activities, interests, opinions, and so on).

Targeting

Third: Evaluate the attractiveness of each segment using variables which quantify the demand possibilities of each segment (e.g., its growth rate), the costs of serving each segment (e.g., distribution costs), the costs to the firm of producing the products and services wanted by customers (e.g., production and product differentiation costs), and the fit between the firm's core competencies and the target market opportunity.
Fourth: Select one or more target segments to serve based on the profit potential of the segment, and its fit with the firm's corporate strategy.

Positioning

Fifth: Identify a positioning concept for the firm's products and services which is attractive to target customers, and which is compatible with the firm's desired corporate image.

Segmenting markets

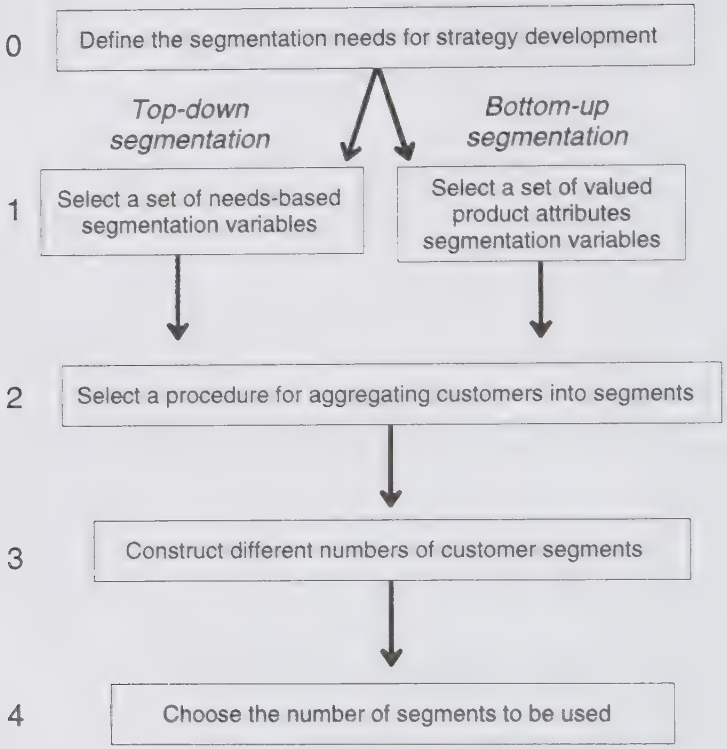
Many ways have been used to segment markets.[4] However, the recent consensus among strategic managers is to base segmentation on customer needs (and the situations in which the product is used).[5] Given this perspective, there are two ways to segment markets. One is to start with characteristics of customers that are easy to identify and see if the resulting customer groups have different patterns of needs. For example, do customers in Perth have a different set of entertainment needs to those in Melbourne? The other way is to group customers together based on their pattern of needs and then search for discriminating characteristics which enable easy identification. For example, are customers who frequent live entertainment venues price sensitive, heavy users, and so on? We might label the first approach as *convenience group* or *backward* segmentation; that is, market segments are formed on the basis of how convenient they are for a particular company to serve. This approach is often used by companies, especially those serving industrial markets. It is essentially a reactive form of market segmentation.

Our position is that companies should be proactive in their approach to market segmentation. They should identify potential differences in customers' needs, wants and preferences, and then see if they can design products and strategies to profitably serve these different needs. Hence, the approach to market segmentation adopted in this chapter is the second one described in the previous paragraph, *forward* or *proactive* segmentation. How should you proceed to apply this approach?

The first step is to explicitly outline the role of market segmentation in the company's strategy. How will it help the firm establish a significant competitive advantage, and what other strategic initiatives may interact with the firm's view of its markets to help achieve its objectives? For example, the capacity to innovate in the domains of new products and/or new business processes are two strategic factors that may influence the way a firm segments its markets. The underlying cost (dis)advantage arising from the firm's position on its experience curve is another factor. Market segmentation should not be undertaken in isolation from the firm's overall strategic intent and its core competencies.

Step 0 in figure 7.3 is a preliminary but vital part of any strategic approach to market segmentation. To illustrate this point, consider a firm with the strategic objective of 'developing and marketing new information technology products'.

Figure 7.3: The steps in segmenting a market


0
Define the segmentation needs for strategy development
Top-down segmentation
Bottom-up segmentation
1
Select a set of needs-based segmentation variables
Select a set of valued product attributes segmentation variables
2
Select a procedure for aggregating customers into segments
3
Construct different numbers of customer segments
4
Choose the number of segments to be used

The segmentation scheme developed must group customers based on their different needs and propensity to adopt such technologies, and describe the resulting segments so that the firm can market its products and services to them. The importance of having a defined corporate strategy that encompasses a distinct segmentation strategy is illustrated by Eppen, Hanson and Martin.[6] They show the value of having a strategy based on the ability to bundle products and services into new (or different) products. A corporate strategy based on the ability to bundle products is explicitly built on a more fundamental strategy that products should be developed and rearranged to meet differences in customer needs and wants. Such a strategy redefines the company's products as possessing joint and separable components that can be used to construct products much like a child with a Lego building set (see Case 7.3).

CASE 7.3 Segmentation as bundling

It has long been a marketing axiom that customers buy bundles of satisfaction rather than products. A segmentation strategy can, therefore, be structured based on which customers choose to buy which bundles of product attributes. The difficulty is in devising a bundling strategy that appeals to consumers and gives cost or demand enhancing benefits to the producer.

An increasing number of companies are realising the value of combining separate elements of their product lines into bundles. Creating a bundle is like creating a new product. Although bundles act like new products in the marketplace, they have the advantage of being much less expensive and risky to create. Bundling also has the advantage of reduced product introduction time.

A bundle is a group of products or services offered as a package. Bundles can have a wide variety of features. Some bundles include some items that are not available separately. Other bundles are offered at a price less than the sum of the individual item prices. Still other bundles endow the buyer with entitlements, such as priority seat selection in the case of airline tickets or theatre subscriptions. In the case of a *pure bundle*, all items must be purchased as a complete package. *Mixed bundling* exists when consumers have the choice amongst purchasing the complete bundle or purchasing its components separately. Bundling decisions typically have serious cost and strategic considerations and so deserve the close attention of general management.

In 1983, the Dodge Omni and Plymouth Horizon were endangered products. With the base car priced at $7,000 and all options priced separately, these two variations on the same car could not compete with less expensive imports. At the same time, the cars were available with a wide variety of options. Indeed, more than eight million combinations were possible. To become competitive, Chrysler switched to bundling and offered only 42 combinations. Chrysler was able to reduce the price of the car, including a typical option package, by more than $1,000. The lower prices attracted new market segments and extended the profitable product life of the cars by several years. The price reductions were made possible by reduced manufacturing costs—longer production runs lowered set-up costs, reduced complications in the car's feature mix resulted in better quality, and $2 million per year was saved through reduced carrying and shipping costs.

Another advantage of bundling is that it begins with good information on customer preferences and production costs. Managing bundles as new products rather than as marketing gimmicks has two broad implications: bundles have a wide variety of potential uses, and implementing a bundling strategy requires a serious commitment to an analytical decision-making process.

Bundling can be profitable when it lowers costs, expands demand or enhances the performance of the products. The following guidelines suggest ways in which these objectives can be achieved:

1 Promote bundling among components that have high set-up costs.
2 Bundle items that have a high contribution margin ratio.

3 Target the bundle for an aggregate market and offer higher-priced individual items to unusual customer segments.
4 In a price insensitive market, create comprehensive bundles when demand is strong and multiple smaller bundles when demand is weak.
5 Use bundling to raise consumer switching costs and reduce consumer trial.
6 Use pure bundling when components perform better together than separately.
7 For new product categories, consider bundling that helps consumers understand the full range of product and service benefits.

Three aspects of bundle design and pricing limit management's ability to completely analyse a bundling opportunity: the large number of possible bundles, the need to carefully track consumer choices among all these possible bundles, and the extreme importance of sensitivity to competitive reactions.

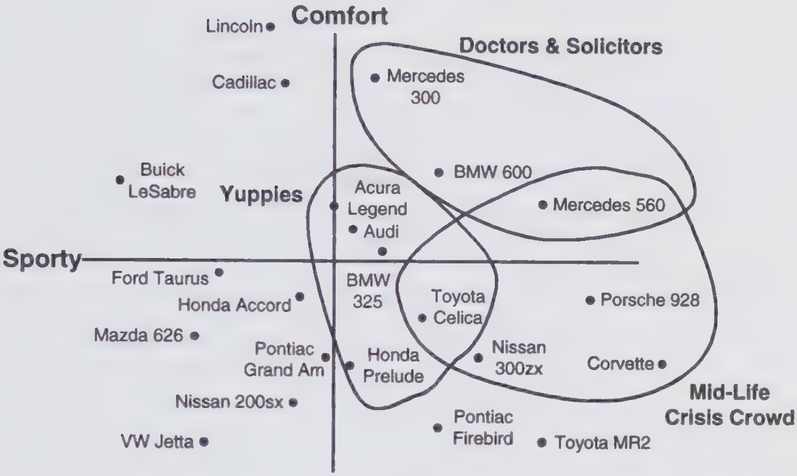
The process of bundling has three main stages. First, we must frame the problem. This requires the identification of the potential bundles we might sell. Second, we need to gather data to define and identify customer segments, to estimate the value each segment places on each bundle and to estimate the cost of providing each bundle. Finally, we need to analyse the results to select the appropriate prices, estimate how consumers will react to these prices and evaluate the quality of the prospective pricing policy.

Even in market situations that are highly competitive, profitable opportunities may already exist within a company's product line. The essential management step is to think of product bundles as a method for improving performance, lowering costs, and reaching out to new customer segments.

Source: G. Eppen, W. Hanson and R. Martin, 'Bundling—new products, new markets, low risk', *Sloan Management Review*, Summer 1991, 7–14.

The next step is to select a set of segmentation variables. These variables should be based on some aspect of a potential customer's needs or wants and be reflective of differences that exist between customers. This, of course, requires intimate knowledge of the factors driving demand for the company's products and services. In the case of geographic segmentation (as discussed in chapter 4), customer travel time, income and location serve as relevant segmentation variables since the relevant customer need is the minimisation of the total cost of shopping time and this differs by distance and income (which measures the marginal value of time). In many consumer markets, the segmentation variables can reflect customer differences on a perceptual dimension which, in turn, can be related to demographic and socio-economic characteristics. In industrial markets, benefits sought depend less on the psychological and socio-economic characteristics of the individual person making the purchase decision and more on the external end use of the product and the profitability generated. In the end, the segmentation variables need to be used to isolate groups of customers

Figure 7.4: Segmentation in the motor car market


Comfort
Sporty
Doctors & Solicitors
Yuppies
Mid-Life Crisis Crowd
Lincoln
Cadillac
Mercedes 300
BMW 600
Mercedes 560
Buick LeSabre
Acura Legend
Audi
BMW 325
Toyota Celica
Porsche 928
Ford Taurus
Honda Accord
Mazda 626
Pontiac Grand Am
Honda Prelude
Nissan 300zx
Corvette
Nissan 200sx
Pontiac Firebird
Toyota MR2
VW Jetta

Source: Adapted from G. Urban and K. Starr, *Competitive Marketing Strategy*, New York: Prentice Hall, 1991.

whose needs show within-group homogeneity and between-group heterogeneity.

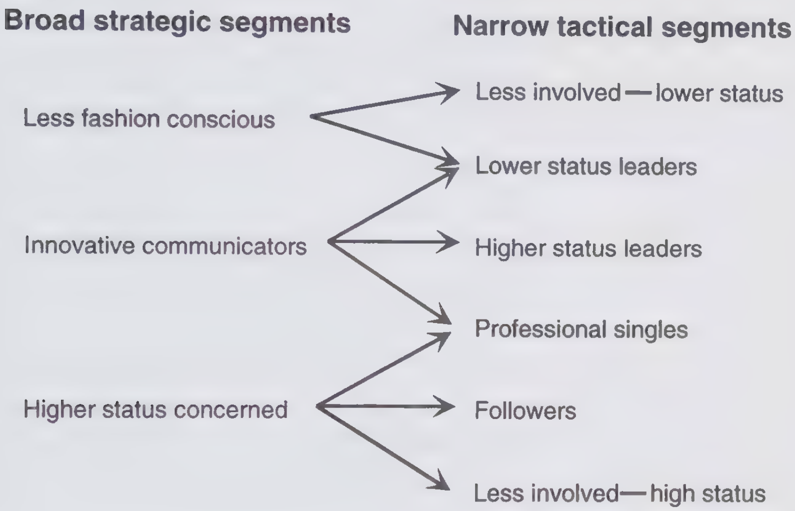
Step 2 focuses on the statistical procedures used to aggregate individual customers into homogeneous groups or segments, although there is an implicit strategic decision associated with how to think about the segments. The major decision is whether the customer segments to be formed will be discrete (each customer in only one segment), overlapping (a customer can be in two or more groups), or fuzzy (each customer is assigned a probability of membership for each segment).[7] Assigning each customer to a single segment is easier to understand and apply but information and strategic advantage is potentially sacrificed. Overlapping or fuzzy segments are more intuitively appealing while also more realistic and theoretically accurate. However, under these circumstances, the segmentation strategy is considerably more complex since functionally identical products need to be positioned differently from the different overlapping segments. The automobile example in chapter 4 approached the formation of the segments as distinct and non-overlapping. Figure 7.4 shows a modified perceptual map for the car market with three of the segments now shown as overlapping. In this situation, strategic positioning issues would arise for the Toyota Celica and the Mercedes 560 since they appeal to two different segments. Toyota would have to decide either to attempt to position the Celica so that it appealed to both 45-year-old divorcee males and 30-year-old investment bankers (perhaps a difficult task) or to position the car as less sporty so that it moved closer to the Honda Prelude and fell out of the Mid-Life Crisis Crowd's consideration set.

At this point in the segmentation process, the analyst must make two crucial decisions (steps 3 and 4). The first decision is to specify the maximum number of segments to construct from the segmentation variables. The second is how to search across these segments to find the appropriate number of segments to use as input to strategic decision making. The lack of a theory specifying the correct number of segments existing in a market forces choice of the appropriate number of segments onto the shoulders of the strategist. Segmentation becomes more art and less science at this point.

Searching for the appropriate number of segments to target generally involves the use of a combination of statistical criteria and management judgement. For example, what usually happens is that the market will be split into structures comprising two groups, then three groups, four groups, and so on, up to a maximum of 10 to 15 groups. Each of these market structures will be examined using various management and statistical criteria to eliminate any which are unsuitable. This invariably leads to a conflict between middle managers, who like to focus on the more narrow definition of market segments, versus upper management, which tends to view segmentation in more broad and easily managed terms. Given these conflicting management agendas, the question arises, how do you develop a segmentation strategy that is both broad enough to make strategic decisions and narrow enough to be operational tactically? The key lies in management's ability to nest its segmentation strategy so that broadly defined strategic segments reflect aggregates of more narrowly defined tactical segments.[8]

For example, Dowling and Midgley[9] found that two market structures could be used to reflect the different needs in the Australian women's clothing market. Splitting the market into three segments was appropriate for making broad strategic decisions, while six segments were more appropriate for tactical marketing decisions. This structure is exhibited in figure 7.5 and shows how the narrow tactical segments are related to the broader strategic segments. There are six tactical segments ranking weakly from low fashion to high fashion. These tactical segments aggregate up into three broader strategic segments, again roughly ranked from high to low fashion. The key to such 'hierarchical' segment clusters is that strategy can be developed at the broad level while implementation can, and really must, be done at the narrow level. The only complication that arises from this type of thinking is that a one-to-one relationship between the narrow and the broad segments usually does not exist. Note that the innovative communicators overlap with the other two segments at the tactical level (through low status leaders and professional singles). The higher level segmentation strategy needs to account for this fact in determining

Figure 7.5: Strategic and tactical segmentation in women's fashions


Broad strategic segments
Narrow tactical segments
Less fashion conscious
Innovative communicators
Higher status concerned
Less involved—lower status
Lower status leaders
Higher status leaders
Professional singles
Followers
Less involved—high status

the nature of the implementation of the strategy (e.g., which distribution channels to use, the advertising message and so on).

In the case of industrial markets, Robertson and Barich[10] found that, at the broad strategic level, most industrial market sales segments can be broken down into three groups: first-time prospects, novices and sophisticates. The first-time prospects are new to the market and have only begun to evaluate vendors. Novices have purchased the product but are still uncertain about the use and appropriateness of the product. Sophisticates have purchased and used the product and are knowledgeable about the product in their own right. (Their full description of the segments is given in table 7.1.)

The Robertson/Barich approach is, of course, limited, but illustrates a very basic form of segmentation, namely a market partition founded on knowledge-based needs that are independent of the idiosyncratic nature of the individual market. According to them, all industrial markets appear to exhibit these global knowledge-based segments. They are not the only researchers who argue that generic segmentation strategies exist. Gensch et al,[11] in their study of ABB discussed in Case 7.1, also argue for the existence of global segments. In their case the segments are:

- company loyal—current customers who will almost never switch to a

Table 7.1: Generic segments in industrial markets

First-time prospects	Novices	Sophisticates
Dominant theme:	**Dominant theme:**	**Dominant theme:**
'Take care of me'	'Help me make it work'	'Talk technology to me'
Benefits sought:	**Benefits sought:**	**Benefits sought:**
Knowledge of my business Honest sales representative Vendor who has experience Sales representative who can communicate in an understandable manner	Easy-to-read manuals Technical support hot-lines A high level of training Sales representative knowledgeable about products and services	Compatibility with systems Customisation Track record of vendor Sales support and technical assistance Speed in fixing problems
What's less important:	**What's less important:**	**What's less important:**
Sales representative's knowledge about products and services	Honest sales representative Knowledge of my business	Sales representative who can communicate in a understandable manner Training Trial Easy-to-read manuals

Source: T. Robertson and H. Barich, 'A successful approach to segmenting industrial markets', *Planning Review,* 20 November/December 1992, 5–11.

competitor;

- competitive—current customers who will potentially switch to a competitor;
- switchable—current competitor customers who will potentially switch to another company; and
- competitor loyal—current competitor customers who will almost never switch to a competitor.

Table 7.2: Variables to segment and describe markets

	Consumer	Industrial
Segmentation	Needs, wants, benefits, solutions to problems, usage situation, usage rate	Needs, wants, benefits, solutions to problems, usage situation, usage rate, size, industry, market served, distribution channel
Description		
• Demographics	Age, income, marital status, family type and size, gender, social class, etc.	Industry, size, location, current supplier(s), technology utilisation, etc.
• Psychographics	Lifestyle, values, and personality characteristics	Personality characteristics of decision makers
• Behaviour	Use occasions, usage level, complementary and substitute products used, brand loyalty, etc.	Use occasions, usage level, complementary and substitute products used, brand loyalty, order size, applications, etc.
• Decision making	Individual or group (family) choice, low or high involvement purchase, attitudes and knowledge about product class, price sensitivity etc.	Formalisation of purchasing procedures, size and characteristics of decision-making group, use of outside consultants, purchasing criteria, (de)centralised buying, price sensitivity, switching costs, etc.
• Media patterns	Level of use, types of media used, times of use, etc.	Level of use, types of media used, times of use, patronage at trade shows, receptivity to salespeople, etc.

The strategic logic that follows from these segments is to focus efforts on defending the competitive segment whilst aggressively seeking the switchable segment and ignoring the competitor loyal group.

Describing market segments

Having isolated a number of segments in a market, the next step is to describe these segments. As noted earlier, the variables chosen to describe the various market segments should highlight both the price sensitivity (and hence profit potential) of each segment, as well as how the company might serve these segments. There are two general types of variables that can be used for this purpose, namely, those that outline broad market characteristics, and those that provide insight into serving one or more of the market segments.

For consumer and industrial markets, a set of broadly similar variables can be used to describe each segment. Some of these are outlined in table 7.2. Profiling the segments in a market using these variables enables the company to find actual and potential customers, understand their purchase motivations, and communicate with them.

As table 7.2 illustrates, there are many different combinations of variables that can be used to describe a market segment. Within the strategic context, the selection of these variables should be guided by ensuring that each variable chosen helps you to:

- measure the size and purchasing power of the segments;
- determine the degree to which segments can be effectively reached and served; and
- determine whether or not effective programs can be developed to attract customers.

Normally, this analysis leads to readily distinguishable segments. However, as Case 7.4 highlights, the best laid plans associated with segmentation strategy can lead to nought when demographic variables are the only descriptors used.

Case 7.4 Failed segmentation in the financial planning market

Following deregulation of the Australian financial system in the 1980s, consumers have been faced with a host of new financial options, making product choices more difficult. To assist consumers in this area, there has been a marked increase in the number of organisations offering financial advice, and the appearance of specialist financial planning organisations. Such organisations have recognised that, in an increasingly competitive market, target marketing is an important strategy for long-term success.

The difficulty, however, is in knowing how the financial market can be segmented. A study of the financial planning market in Perth, Western Australia, was undertaken to see if market segments could be identified and whether or not

Segmentation variables in the financial planning market

Segmentation variables	Disinterested investors	Demanding investors	Security seekers
Independence	3.58	4.64	3.69
Future	2.70	4.25	2.64
Income/growth	2.96	4.30	3.71
Security	2.55	4.77	4.64
Percentage	13%	52%	35%

Note: Ratings range from 1 (unimportant) to 7 (extremely important).

they provided the type of information which could assist in developing marketing strategy.

Fourteen investment benefits were ranked against a possible investment opportunity by 400 randomly selected, metropolitan residents. After the benefit data had been factor-analysed, four distinct benefits were identified as being sought by investors. These were:

- a more independent lifestyle;
- money in the future;
- income/growth potential;
- investment security.

Overall, and not surprisingly, security was revealed as the most important benefit consumers demand, followed by an ability to obtain greater financial independence, with the distant future seeming less important.

The question then was, would the views of benefit segments differ from those of the population as a whole? Further analysis, using the four critical factors outlined above, identified three distinct investor groups, each seeking particular benefits. From the group means shown in the table above, it can be seen that the 'disinterested investors' group was most concerned about independence (but least concerned about all the benefits compared to the other groups); the 'demanding investors' group was concerned about all benefit dimensions; and the 'security seekers' group valued security, had a moderate interest in financial independence and income/ growth, but was not overly concerned about the future.

The next step was to try and highlight specific demographic characteristics within the three groups which financial planners might then use in operationalising market strategies. However, results here were disappointing, indicating that, while the marketplace can be segmented using investment benefits, the benefit segments are not easily distinguishable from one another on demographic grounds. This is not good news for marketers of financial planning services because, without clearly identified groups, media planning and many distribution decisions are based on demographic variables alone. Hence, it is difficult to make targeting decisions and formulate marketing programs.

Based on the results of the study, it would seem that security is still the overriding need of the majority of investors; however, more than half the respondents (52%) wanted everything from financial planners. This may be because the financial planning industry is still very young in Australia and, as it grows, consumers will become more sophisticated and, therefore, more discerning in the benefits they seek.

Source: G. Soutar and M. McNeil, 'A benefit segmentation of the financial planning market', *International Journal of Bank Marketing*, 9, 2, 1991, 25–9.

Evaluating segment attractiveness

Keeping in mind the criteria just discussed we now turn to selecting one or more markets to serve. Nine measures, in terms of three broad factors, can be used to evaluate the attractiveness of a segment of customers (see table 7.3). One factor relates to the size and growth potential of the segment. Although bigger, faster growing segments seem intuitively appealing, what constitutes the right size and growth potential for a company will depend on its resources and capabilities. For example, a big company like BHP or CSR might choose to target only big and/or fast growing segments because these have a better fit with the company's growth objectives, and because it has the resources to combat new entrants to the market. A small company like the clothing retailer Country Road may be forced by its current resource base (fashion expertise, number of distribution outlets, etc.), to limit its activities to selling casual wear garments and forgo product line expansion.

The second factor relates to the structural characteristics of the segment. We can identify four such criteria: competition, segment saturation, protectability, and environmental risk. The set of criteria identified by Michael Porter[12] is the most widely used framework for assessing the degree of competitive rivalry in a market segment. Criteria such as barriers to entry, barriers to exit, the threat of new entrants, pressure from substitute products, customer bargaining power, and supplier bargaining power are necessary to consider. A company also needs to assess whether or not the existing competitors in the market are serving all the obvious segments or if there are potential gaps in the market. Criteria 5 and 6 focus on different aspects of risk, namely, the risk that the company's inventions cannot be protected, and the risks emanating from the operating

Table 7.3: Segment attractiveness criteria

Criteria	Examples of considerations
Size	Market potential, current market penetration
Growth	Past growth, forecasts of technology change, etc.
Competition	Barriers to entry, barriers to exit, position of competitors, ability to retaliate
Segment saturation	Gaps in the market
Protectability	Patentability of products, barriers to entry
Risk	Economic, political, and technological change
Fit	Coherence with company's strengths and image
Relationships with other segments	Synergy, cost interactions, image transfers, cannibalisation
Profitability	Entry costs, margin levels, return on investment

environment.

The third factor relates to what we broadly term product-market fit. Criteria 7 to 9 propose that a company should ask at least three types of screening questions. First, does serving a segment fit with the company's strengths and its desired corporate image? Second, is there any synergy to be gained from serving this segment? Third, can the company sustain the costs of entering this segment, and can it price its products and services to achieve the desired margins and return on investment? Many companies have tried to grow by entering a market segment that has a high return on investment but a poor fit with the firm's current capabilities. For example, the Levi Corporation once tried to sell tailored suits to men. Customer research prior to launching the new products indicated that these suits did not fit the Levi blue jean image. Also, Levi decided to distribute the suits through its existing retail network, even though its target customers traditionally bought their suits from a different type of retail outlet.

The product failed in the market. On the other hand, Levi's line of casual cotton wear, known as Dockers, has been quite successful since it more closely matched Levi's strengths in production and distribution while not conflicting with customers' perceptions of a Levi product.

Selecting target segments

Having developed a set of criteria to evaluate the attractiveness of various market segments, the strategist must now select one or more of these segments to serve. There are five basic options:[13]

- single segment concentration;
- selective specialisation;
- market specialisation;
- product specialisation;
- full market coverage.

Which of these options should be chosen? If yours is a small company with limited resources, then a full market coverage strategy probably cannot be implemented. Big companies, however, have a strategic choice to make. Most guidance comes in the form of a simple heuristic such as: select those segments which rate highest on the attractiveness criteria described in the prior section.

When a company targets only its most attractive segment, it concentrates all its resources on serving a single group of customers. This focus should enable the firm to understand and serve the needs of this segment to the best of its ability. It should also be able to obtain a high return based on its strong market position and its specialist reputation. Such single segment concentration, however, comes at a price, namely, a potentially high-risk exposure for the company. All its eggs, so to speak, are in one basket.

To reduce some of the risk associated with a single segment strategy, a company may decide to serve two or more segments. The selection of these segments can be modelled as a conjunctive choice. First, which segments pass the attractiveness criteria outlined above? Second, which of these acceptable segments offer the best combination of risk and return to the company, given its risk tolerance? Both sets of criteria are used to allocate the company's resources across a portfolio of segments.

A variant of the selective specialisation strategy is product-line specialisation. Here, the company makes one product or a limited range of products for sale to any type of customer who has the capacity to pay. For example, Boeing makes aircraft, Kodak makes film, Intel makes computer chips, and MGM makes movies. When you think of a particular product category like cola or rental cars, it is often one of the product specialists (like Coke or Pepsi or Hertz or Avis) that comes to mind.

A variant of the single segment strategy is market specialisation. Here, the company identifies a particular type of customer and has a range of products and services to meet a cluster of related needs of this segment. For example, the explosives divisions of Du Pont and ICI target open-cut and underground mines with a range of different explosives and blasting control systems.

The differences between product and market specialisation are two-fold. First, market specialisation offers potential synergies for the various products and services sold to a common customer. For example, Du Pont and ICI could sell a 'blasting system' (wet and dry-hole explosives, detonators, blast timing controllers, etc.). Product specialisation, however, typically offers few such product bundling opportunities because the focus is on selling a standard product to a variety of customers. For example, Canon sells its small photocopiers to any person or company that wants one.

The second difference relates to the impact that a breakthrough in technology can have on a particular supplier. In industries like bio-technology, pharmaceuticals and computer chips, proprietary scientific breakthroughs can create and destroy companies. Companies that specialise in serving the needs of a particular type of customer, however, are often less reliant on a single technology as their key success factor. The rise and fall of IBM is an interesting illustration of this difference. In the 1960s and 1970s, when IBM focused on serving the information processing needs of large companies, it did so very successfully using good, though not outstanding, computers and a very good business process. In other words, it used two technologies, one computer-based and one business-based. In the late 1980s and early 1990s, a period in which IBM became just another (albeit large) computer company, its product R&D could not keep pace with its competitors, and it suffered some of the biggest losses in corporate history. The impact that rapid market change can have on an industry and its segmentation potential is illustrated in Case 7.5.

Case 7.5 Market upheaval and market segmentation in the personal computer industry

Traditionally, the highly competitive personal computer industry has been segmented into three broad market segments—corporations, small businesses, and home users, with major PC vendors tending to concentrate on the more profitable, high-end, corporate users.

Until recently, this focus was reflected in the way PC products were presented and sold. Typically, manufacturers produced similar models in the same line, differentiated mainly by speed and power. They were distributed via dealers who then handled the selling. Whilst this approach suited the sophisticated requirements of informed corporate buyers, it was decidedly user unfriendly for those with simpler needs, especially home users who generally lack technical expertise and buy on price and software-driven functionality.

Following a marked fall-off in corporate demand for personal computers since 1992, the industry has responded by targeting smaller, more focused segments of the market, especially the elusive home buyer. This process has involved pre-configuring computers and software into different packages for different types of home-based users and then selling them through a variety of mass-market retail channels including department stores, electronic superstores, direct sales and mail order.

Manufacturers have especially been targeting the highly motivated 'small office, home office' (SoHo) segment of the home-buyer market which consists of students, consultants and workers who use computers at school or the office and want to work at home as well. The availability of powerful computers at low prices, combined with a reason to buy, have led to the emergence of this market which, research indicates, is the only computer market showing significant growth.

Major suppliers like IBM, Apple, Compaq and Dell all introduced inexpensive, pre-packaged, 'plug in and play' designs for the home market, where price, service and ease of use were the critical success factors. Of course, the risk of supplying such products to this emerging segment was that traditional corporate customers would purchase cheaper, low-end PCs from mass retailers. However, when Compaq launched its ProLinea at $899 and sold it through mass-retail outlets such as Tandy Corporation's Computer City Super Centres, it was a huge success and, even more encouraging, it was purchased by new customers, not corporate bargain-hunters. Either way, it was considered a risk worth taking if overall PC volumes were to be increased, especially given the potential of the SoHo market.

Source: C. Arnst, 'PC makers head for "SoHo"', *Business Week*, 28 September 1992, 108–10.

A full market coverage strategy is generally the province of big companies. For example, BHP makes a wide variety of steels to serve most of the Australian market. Qantas attempts to serve every person who wants to fly to its overseas destinations. AMP has insurance policies to meet the needs of most Australians. The big four Australian retail banks (ANZ, Commonwealth, NAB, Westpac) offer a wide variety of financial products to all types of business and consumers. Any type of multi-segment strategy is a different form of diversification than a product or market specialisation strategy. It allows the company to select segments which have lower correlations between their expected returns than the customers included in a product or market specialisation. Portfolio theory suggests that the company can manage (reduce) its risk profile by selecting segments which have expected returns which are negatively correlated, or which have a low positive correlation.[14]

Trying to serve multiple types of customers simultaneously comes at a cost. For example, Qantas has three different seat configurations and three different in-flight passenger service crews on its planes—first, business and economy class. BHP has multiple steel plants and a number of steel fabricating companies (e.g., Tubemakers) to serve its customers. Few companies can make a single product that adequately serves the needs of every market segment. Even Coca-Cola has a range of beverages to serve the cola market (e.g., in the US they have Classic Coke, New Coke, Cherry Coke, Clear Coke, Diet Coke, Caffeine-Free Coke, and Caffeine-Free Diet Coke).

Most companies alter their product offerings to different market segments. This can be done by varying either the physical product and/or the non-product attributes such as the price, packaging, warranty, distribution, and image-based advertising. Most changes are comprised of a combination of product and non-product attributes. However, if there are substantial economies of scale available, then only the brand name, packaging, advertising and price may be changed. This is the case for the various brands of Australian-made light globes which are all produced at the same plant.

Differentiated products targeted to different market segments typically create higher sales than a single product targeted to the average customer.[15] However, differentiated marketing almost always increases the costs of doing business (e.g., product modification costs, production costs, administrative costs, inventory costs, and promotion costs). This is amply illustrated by Case 7.6.

Case 7.6 The cost of product line complexity

In Case 7.2 we assumed that there was a single product sold to customers who are differentiated in terms of service cost. Many problems of segmentation arise from differences in customer preferences that can only be satisfied with a range of variants of the product. If one firm seeks to satisfy a wide range of preferences, it will face the problem of product line complexity.

Some companies will seek to meet the breadth of customer preferences by offering a wide product line. Such firms typically have a technical capacity to respond to a range of customer preferences. Attempting to respond to a wide range of customer preferences can seem the sensible way to gain market dominance, build experience and maintain profitability. Its effect can turn out to be the reverse of that, eroding profitability, fragmenting experience gains and ultimately undermining market position.

To see how this can occur, we will explore another simple example. Assume we have just two competitors, X is the industry leader and Y is number two. The industry leader has high total volume but achieves it with a proliferated product line. The firm has more product families than its competitor.

Product line complexity and cost

	X	Y	Z
Indirect cost	$20	$15	$15
• Number of models	20	10	10
• 75% slope			
Marketing cost	$10	$14	$10
• Total channel volume	10,000	5,000	10,000
• 70% slope			
Direct cost	$70	$70	$63
• Volume/model	500	500	1,000
• 90% slope			
Total cost	$100	$99	$88

Each firm's cost is broken into three elements, each of which responds in a distinct fashion to production and marketing decisions for the firm. Indirect costs in the production system are very sensitive to the product line complexity and production process complexity. The number of people required for product design, value engineering, production, planning and scheduling, materials control and so on, will depend on product and process complexity. Marketing cost is essentially volume responsive without regard to complexity—the more we move through a distribution channel, the greater the scale effects and lower the unit cost. Production costs are very heavily influenced by set-up times and set-up costs and therefore by run length. Production runs dictate the firm's ability to choose specialised machinery, to specialise the workforce and so on.

To analyse the competitive dependencies associated with complexity, we assume that:

- marketing costs/unit fall by 30 per cent if volume doubles (70 per cent slope);
- indirect production costs/unit can be reduced by 25 per cent if the number of different models is reduced by one-half (75 per cent slope);
- direct production costs/unit can be reduced 10 per cent if run lengths of particular models are doubled (90 per cent slope).

Now consider the initial cost position of the two firms. We can see that X, which markets 20 models, has total per unit cost of $100. This consists of $20 indirect costs, $10 marketing costs and $70 direct costs. Since Y makes only half as many models as X, Y should have a less complex system. Consequently, we expect to see lower per unit indirect costs. In this example, the indirect costs will be $15 per unit. So far as marketing costs are concerned, firm Y does not have the leader's scale advantage. It has only half the leader's volume going through the distribution channel. With a 70 per cent slope, it has a cost disadvantage. So per unit marketing costs are $14. What happens to direct cost in the plant? Y has the same average run length as X, the ability to choose the same machinery, get the same degree of labour force specialisation and everything else. So its per unit direct costs equal those of X. When we take these three components together, we find that X's per unit total cost slightly exceeds that of Y. Despite X's volume being twice that of Y, X is not the low cost producer. *All of X's potential cost advantage has been squandered through product line complexity.*

The situation which we have described here reflects the actual experience of many leading firms which have been threatened by new focused competitors (a fact referred to in chapters 3 and 4 with respect to time- and variety-based competition). At the centre of this competition lies a trade-off between total scale and complexity. Where this trade-off does arise, there are several possible outcomes for the competitors. Let us look at the issues through the eyes of the managers at X.

As an exercise, let us explore the consequences if it were somehow possible to cut the proliferation of product range and still hold market share. We can then see what happens to X's costs if we cut from 20 models to ten (column X*). The per unit indirect costs drop to $15. Marketing costs are unchanged, since under our assumption, they depend on total volume. But direct production costs will change. If X doubles the volume per model to 1,000, assuming a 90 per cent slope, which is fairly flat, per unit direct costs fall to $63. On this basis, X's total cost becomes $88 per unit. So X can afford to spend up to $10 per unit to achieve this change, whether through a price cut, money spent on product design, additional advertising, subsidising and training dealers or salespeople or whatever seems most effective.

Sometimes companies find that they have too many brands (i.e., they have over-segmented the market) and they either eliminate some poor performing brands and/or reposition a brand to appeal to more than one segment. A good example of this strategy was when Johnson & Johnson started advertising its baby shampoo to adults. (If it's gentle enough for baby, then it's gentle enough for an adult to use every day.) Another example is the food marketer Kellogg which has advertised some of its ready-to-eat breakfast cereal products as between-meal snacks. Because a differentiated strategy leads to both higher sales and higher costs, it may not necessarily be the most profitable strategy for a company to implement. Hence, Kotler[16] suggests that a company has three alternative market selection strategies at its disposal. These provide a summary of the targeting phase of STP strategy. (See figure 7.6.)

With an undifferentiated strategy (a), the company offers one marketing mix (one product, one advertising theme, one price and so on) to a mass market. Customers are viewed as homogeneous and are faced with a take-it-or-leave-it choice with respect to the company's product. A differentiated strategy (b) requires that the company develop a distinct marketing mix for each segment. In strategy jargon, each segment is offered a different value proposition. The concentrated marketing (c) approach mixes characteristics of the two prior strategies. A standard marketing mix is used but the market is still segmented into different groups. The standard marketing mix differs from that in the undifferentiated case since it implicitly accounts for the segmentation that exists in the market. For example, although the company projects one image, the customers may be naturally picking up on different characteristics of that image. Coca-Cola and Pepsi are classic examples of concentrated marketing. Both use generic imaging campaigns while allowing customers to select across a host of product offerings.

Positioning

Regardless of whether or not a company decides to offer a range of differentiated products, it still must consider how it will position its product(s) in the market. Few companies want to be accused of selling a commodity (and have their customers constantly asking for a price cut). Although some products are inherently easier to position in customers' minds than others (e.g., fashion clothes versus plastic bubble wrap), one of the fundamental tasks of modern marketing is to develop a positioning strategy for the product (and the company).[17]

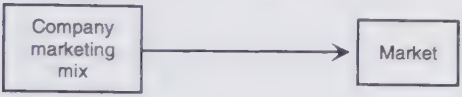
Positioning is essentially a communication task. For example, if you remove the brand names and packages from many consumer products such as beer, cola, personal computers, petrol, video cassette recorders or washing powder, many people can't really tell the difference in the performance of similar products. The reverse is also often true. Some products are technically and/or functionally better than others, yet consumers are not convinced of the difference. For example, the overall engineering and safety of a Mercedes car is probably better than a Volvo; however, Volvo holds the safety position in many customers' minds. In the 1980s, IBM certainly didn't make the best computers technically, yet many customers were prepared to pay a price premium for an IBM.

Rossiter suggests the following approach to tackling the positioning issue.[18] For any product or service, complete the following positioning statement:

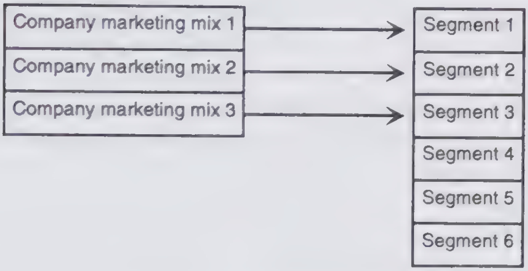
1 To *(describe the target audience)*,
2 'XYZ' is the brand of *(state the category need)*,
3 that offers *(state the brand benefit or solution to a problem)*.

Figure 7.6 **Differentiation strategy and marketing mix**

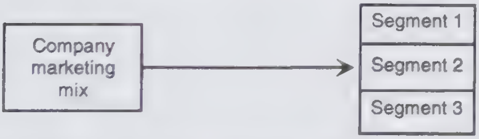
(a) Undifferentiated marketing


Company marketing mix
Market

(b) Differentiated marketing


Company marketing mix 1
Company marketing mix 2
Company marketing mix 3
Segment 1
Segment 2
Segment 3
Segment 4
Segment 5
Segment 6

(c) Concentrated marketing


Company marketing mix
Segment 1
Segment 2
Segment 3

Source: P. Kotler, *Marketing Management*, Englewood Cliffs: Prentice-Hall, 1994, 285–86.

This positioning statement contains three links. One connects the brand to the category need and says that the brand is an 'X-type' of product (e.g., a personal computer). A second link connects the brand with the target customer segment (e.g., small business people). The third link connects the brand to a relevant purchase motivation via its benefits (e.g., easy to use), or the solutions to a customer's problem (e.g., applications software).

Linking the brand to a category need is what is called *brand-market* positioning. Linking the brand to the target customer segment is called *brand-user* positioning, while the brand purchase motivation link is called *brand-benefit* positioning. There are many other ways to position your brand (e.g., by linking the brand to a product attribute, use occasion, its price point, or another product).

The crucial decision is *when* to use *which* positioning option. Once this decision has been made, the tactical details of the positioning strategy can be implemented. These usually entail designing the brand's marketing mix (product specifications, price point, distribution, promotion, etc.). Because the focus of this chapter is primarily strategic, we confine the rest of this section to a brief outline of some of the broader strategic issues. Rossiter again provides some interesting guidelines, as do two American consultants, Al Ries and Jack Trout.[19]

Consider the question of how a brand should be positioned with regard to the product class or category need. The two main options are to position the brand centrally or differentially. In many product categories, the first brand to make a successful impact in a category occupies the central position. In effect, it plays a critical role in defining the category. When Apple introduced its first machines, they defined personal computers. Levi had a similar effect on the jeans category, as did Ivory in the US bar-soap market, Coke in the cola market, and McDonald's in fast food. Most other brands should choose a differentiated position based on an attribute (price, quality, service, etc.), benefit or a use occasion that is important to customers. The exception to this rule is where a brand can demonstrate attribute performance equal to or better than the pioneer at a significant price saving (e.g., IBM-clone personal computers).

Another major question is whether to position with reference to the user or the product's benefits. In advertising jargon, the choice is 'user-as-hero' or 'product-as-hero'. Rossiter suggests that user-as-hero positioning is most appropriate when:

- the company chooses to be a market specialist (i.e., special type of customer); or
- a technical product is sold to a 'novice' customer (who would not, and does not want to understand the technical aspects of the product); or
- the purchase motivation is one of social approval (e.g., cosmetics, fashion clothes, beer, wine, etc.).

Product-as-hero positioning is appropriate in most other situations, and will be based on attributes such as price, quality, range of features, after-sale service, warranty, use occasion, comparison with a competitor's product, and so on. The essential difference between these two approaches is that, in product-as-hero positioning, the product's characteristics are the message while, in user-as-hero positioning, the user's characteristics are the message.

These broad suggestions about appropriate positioning strategies are only a helicopter view of strategic positioning. One obvious omission from the discussion is the position (already) adopted by a competitor. Late entrants to a market are often restricted in their choices because other companies have claimed the most desirable positions for their brands. For example, if 'Coke is the real thing' then Pepsi has to position somewhere else, like 'join the Pepsi generation'. Similarly, Mercedes use the positioning slogan 'engineered like no other car', while BMW positions on an attribute closer to customers, namely, 'the ultimate driving machine'.

Summary—the role of segmentation

Strategists and marketers have yet to agree on the best way(s) to strategically segment markets in order to gain and sustain a competitive advantage. We have attempted to integrate the way marketers approach the task of market segmentation with the issues that strategists consider important. The overall paradigm used is the STP framework. In the process of this integration, we have broken some new ground.

The overall philosophy of this chapter is that the needs of customers and the capabilities of the organisation must both be explicitly incorporated into the market segmentation strategy. A second theme is that good marketing and good strategy are based on the deliberate choice of target customers—who will be served and, just as importantly, who will not be served. A third theme is that it is important to incorporate some of the softer aspects of consumer psychology with the harder, more traditional industrial organisation models used by strategists.

As should now be apparent, strategic market segmentation combines a detailed analysis of your company and its competitors with some creative thinking. This is not an easy task, and one probably best done using a team rather than a single person. An architect assisted by some engineers is a good analogy. Good segmentation then makes the builders' job of implementing the company's overall strategy that much easier.

Chapter 8

The strategic gains from vertical integration

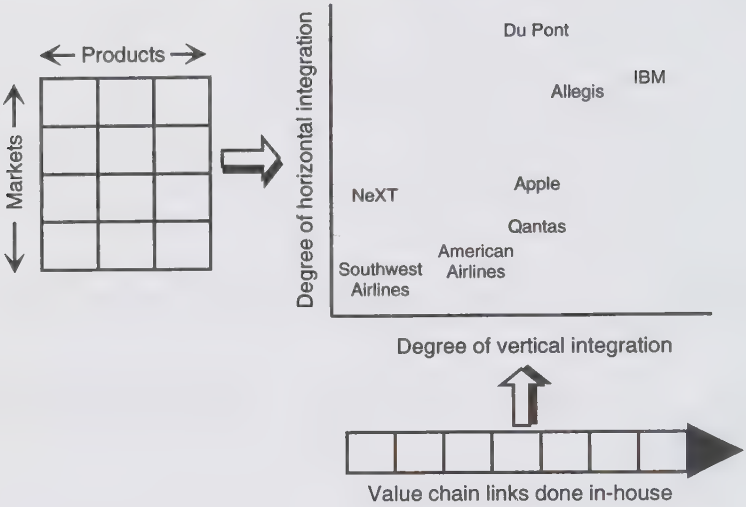
[T]he troops with which a Prince defends his state may be his
own or they may be mercenaries . . . Mercenaries are useless and
dangerous . . . and any ruler who keeps his state dependent on them will never
have real peace and security, for they are . . . ambitious and faithless . . .
and have no tie of devotion except their meager pay.

Niccolo Machiavelli (1469–1527)

Vertical vs horizontal integration

We can think of a firm as having two general dimensions to its strategy and structure. The firm's *horizontal* structure characterises the company based on the products it chooses to produce and the markets (or segments) it chooses to serve. The company's *vertical* structure characterises the organisation based on the nature of its procurement, logistics, production, distribution, selling and service processes—the structure of its internal value chain. The horizontal dimension addresses the *what* (products) and *where* or *to whom* (markets and/or segments) of corporate strategy while the vertical dimension addresses the *how* (how the what and where are satisfied). In general, firms have tended to expand their vertical structure first, leaving horizontal expansion to much later in the company's life cycle. In this sense, vertical integration is one of the earliest and most basic strategic steps that companies take.

Figure 8.1: Vertical and horizontal integration


Products
Markets
Degree of horizontal integration
Du Pont
IBM
Allegis
Apple
NeXT
Qantas
American Airlines
Southwest Airlines
Degree of vertical integration
Value chain links done in-house

Just as our discussion of process and product innovation highlighted the interaction between these two types of innovation, it is difficult to think of cases of pure vertical integration (VI) and pure horizontal integration (HI). Indeed, as we will discuss shortly, it is sometimes difficult to figure out whether you have a case of vertical or horizontal integration! In reality, the factors leading to greater vertical integration in a company will commonly affect a firm's choice of its level of horizontal integration and vice versa. For example, IBM's strategy of being a full-service provider of diversified (and proprietary) computer systems has almost de facto determined its heavy degree of vertical integration.[1]

Figure 8.1 is meant to provide a simple view of the interaction between VI and HI. The degree of HI can be viewed (somewhat simplistically) as a combination of the products and markets served—we may even want to use the term 'horizontal diversification' since it is not clear there is any integration going on in many firms! The degree of VI can be defined as the percentage of the total value chain (from material sourcing to final product provision) that is done in-house (or owned by the firm). The point of the graph is to show that companies in the same industry can, and do, choose different VI/HI mixtures and these companies change this mix when the circumstances change or when they recognise that a mistake has been made.

Consider the comparison between Southwest, American, Qantas and United Airlines (Allegis) shown in table 8.1. Southwest is the least integrated of the four carriers. It simply flies the planes (all of which are 737s and most of which are

Table 8.1: Distribution of activities for a sample of airlines

Value activity	Southwest	American	Allegis	Qantas
Aircraft procurement	Leased	Owned	Owned	Owned
Aircraft maintenance	In-house	In-house	In-house	In-house
Reservation system	None	SABRE	APOLLO	None
In-flight services	Transacted	Transacted	Transacted	Transacted
After-flight services	None	None	Owned Hertz, Hilton & Westin	Tours/travel centres

leased) between a limited number of cities. Allegis, as United Airlines was known briefly in 1987, at one time operated hotels (Hilton and Westin) and a car rental agency (Hertz) as well as handling its airline operations and the reservation system, APOLLO.[2] Today it looks more like American Airlines, which operates only the airline and its reservation system (American's is called SABRE). Qantas is a somewhat intermediate case. Although not possessing its own reservation system, it engages in holiday tours and handles more travel agent type business than the three other airlines.

Two points come out of this example. First, firms in what appears to be a homogenous industry make radically different integration choices. Second, what we define as VI or HI is subject to quite a degree of latitude.[3] If we take a definition of the value chain in the airline travel industry as running from airline procurement to services on the ground (such as accommodation, transit, tours) then Allegis/United and, to some extent, Qantas would simply be vertically integrating by handling tours or owning hotels and car rental agencies. If we view the value chain as ending when you take your bags off the luggage carousel, then Qantas and Allegis would be engaged in HI.

Although noting the complexities that exist in the definition of vertical versus horizontal integration, we will side-step this issue and focus on VI as the simple merger of activities between links in the value chain (or between different economic agents engaging in activities along the value chain). The issue of distinguishing between VI and HI will be left for a fuller discussion in the next chapter. Having noted that VI is common in some industries (conventional steel production and aluminium) while not in other industries (clothing and white goods retailing), our focus here will be on two related questions. Why is VI strategically sound in some instances and not in others? And, more fundamentally, what strategic advantage does VI confer on the vertically integrated firm that cannot be achieved through other strategic and organisational devices? As a way of opening your eyes to the complexity associated with a company's choice of how to link components of the value chain, let us consider one of the least integrated major companies in the world, Benetton.

Case 8.1 Benetton—the perfectly vertically de-integrated company

While it is generally accepted that business success is achieved through unassailable competitive advantage, a number of successful companies have challenged this notion by making co-operation their competitive edge. In the case of the Italian casual clothing manufacturer, Benetton, for example, most of the organisation's production, distribution and sales activities are performed externally via a closely co-ordinated network of subcontractors. In this way, potential competitors have been turned into allies, and Benetton has been able to reap the efficiencies of a large, integrated firm based on co-operation, rather than competition.

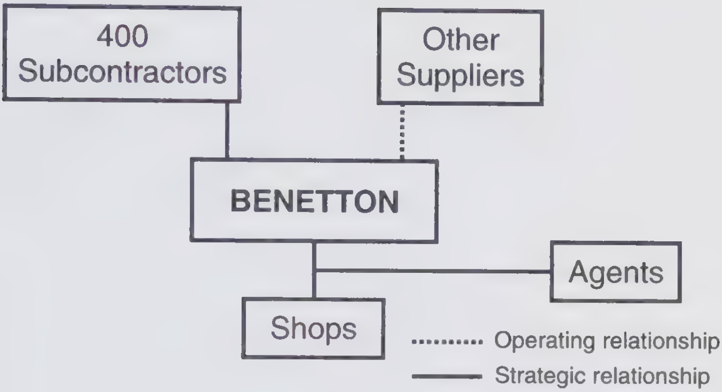
The experience of Benetton is quite a success story, considering that it has grown from practically nothing in 1970 to achieving annual sales in excess of one billion dollars. The fact that such growth was achieved in a mature industry (apparel), and where labour was both expensive and unionised (northern Italy), is even more significant.

The Benetton Group was founded in 1965 by brother and sister team Luciano (a fashion wholesaler) and Giuliana Benetton (a sweater designer). Their early success with soft, colourful, wool-blend sweaters attracted the two youngest Benetton brothers, Gilberto and Carlo, into the partnership. As the product range expanded, Benetton continued to concentrate on fashionable, brightly coloured, casual garments made of natural fibres, so targeting the young, free-spending market segment.

From the beginning, Luciano Benetton adopted a global outlook and a strategy based on 'industrial fashion' rather than the artisan approach of other Italian fashion houses. This meant the pursuit of volume and its associated economies of scale, which would make it possible to offer good design and good quality at competitive prices. At the same time, the company needed to be flexible in adapting to its market's changing tastes, which meant close contact with its customers for fast feedback and quick response.

In reconciling these seemingly contradictory objectives, Benetton chose to centralise some activities where size would be an advantage, and decentralise others where flexibility and efficiency were required. Purchases of raw materials,

The Benetton system



for example, are centralised, making Benetton the world's single largest consumer of wool, and the beneficiary of enormous economies in the most important cost-item of its product range. Manufacturing processes, on the other hand—apart from dyeing and cutting, which require specialist, high-tech applications—are dispersed across 200 or so subcontracting operations. These small manufacturers produce exclusively for Benetton.

For its part, Benetton seeks to establish and maintain close relationships with its subcontractors by offering assistance with production planning and materials requirements, providing them with bills of labour and standard prices and costs, and supplying technical assistance to maintain quality standards.

In order to gain control over their distribution channels, the Benettons set about developing an informal network of agents, comprising long-term friends and acquaintances, whose task it was to find others interested in managing and investing in individual retail outlets with them. As with the subcontractors, agents agreeing to establish and stock retail outlets exclusively with Benetton products often did so on the strength of a verbal agreement.

Initially, the Benettons sold their products through leading Italian department stores; but in 1968 they opened their first shop in Belluno, setting the pattern for the many stores to follow. As their operations expanded, Benetton gradually divested itself of all but a few stores in leading city locations, and the retail function was carried out by small but committed external investors in partnership with the agents. The stores, however, maintained their distinctive Benetton features of small size, simple design, open layout and colourful displays.

Of special significance in the development of the Benetton retail network was the role of the agents, who acted as intermediaries between the company and its shops (the market). Comprising less than 80 people, these agents were responsible for finding and training individual store owners, displaying the Benetton collection to store operators in their assigned regions, assembling orders for stock, and generally supervising the merchandise and pricing at the stores. In return, agents earned a commission of about 4 per cent of factory sales sold through their retail outlets, as well as their share of the profits of the stores in which they held ownership.

The stores themselves, while fairly closely co-ordinated by Benetton, were not strictly franchises. Shop owners were not required to pay Benetton a fee for use of its name or a royalty based on a percentage of sales or profits. They were, however, required to carry only Benetton merchandise, maintain a minimum sales level, adhere to suggested mark-ups, pay for their orders according to a pre-set schedule, and develop a good understanding of the 'Benetton way of doing things'.

Clearly, the special relationships which Benetton has maintained with subcontractors and shop owners form the basis of the company's competitive advantage. Flexibility and low overhead costs are achieved via their subcontractors, while outstanding service and close market contact are offered by their shops. Operationally, it is a situation where each co-operating business is better off with its partner than it would be on its own, with all parties maximising profits in the long term by sticking to the rules.

For a co-operative strategy to be successful, co-operation must not only be achievable and sustainable, but the outcome of such co-operation has to be increased efficiency, that is, lower costs with two separate companies than with one integrated company. Consider Benetton and the assembly of its semi-finished garments. This is a 'no-tech', labour intensive operation with no associated economies of scale. The critical variable is supervision of direct labour, and maximum efficiency will be achieved where there is the incentive to perform. This is more likely to occur in a small, family-owned workshop, typically with less than 14 employees, rather than in a 12,000 strong, unionised operation, which would be the case if Benetton undertook everything on its own.

Co-operating companies also run the risk of having their competitive edge appropriated by a partner or having vital company information diffused via third parties. Benetton avoids many of these risks by demanding exclusivity of its subcontractors and shop owners.

As noted earlier, Benetton keeps all purchasing in-house because of huge attendant economies of scale, while it subcontracts the assembly process, where small companies are more efficient. Consequently, at each step of the value chain, the company has made a conscious decision as to whether that step should be performed inside or outside, in accordance with its goal of maximum efficiency. In this respect, Benetton is really neither integrated nor de-integrated, but a large company full of gaps, where the gaps correspond exactly to those activities where external costs are lower than the internal costs of performing those activities within a single, integrated firm.

Source: Adapted from J. Jarillo and H. Stevensen, 'Co-operative strategies—the payoffs and the pitfalls', *Long Range Planning*, Vol. 24, No. 1, 1991, 64–70.

The drivers of vertical integration

There are two conventional arguments for vertical integration. First, firms use VI as a means of raising barriers to entry and to protect themselves from existing rivals. This anti-competitive view held sway for a long period of time and was the dominant force behind US antitrust policy and many of Australia's Foreign Investment Review Board (FIRB) regulations relating to VI. We will discuss this dark side of VI towards the end of the chapter.

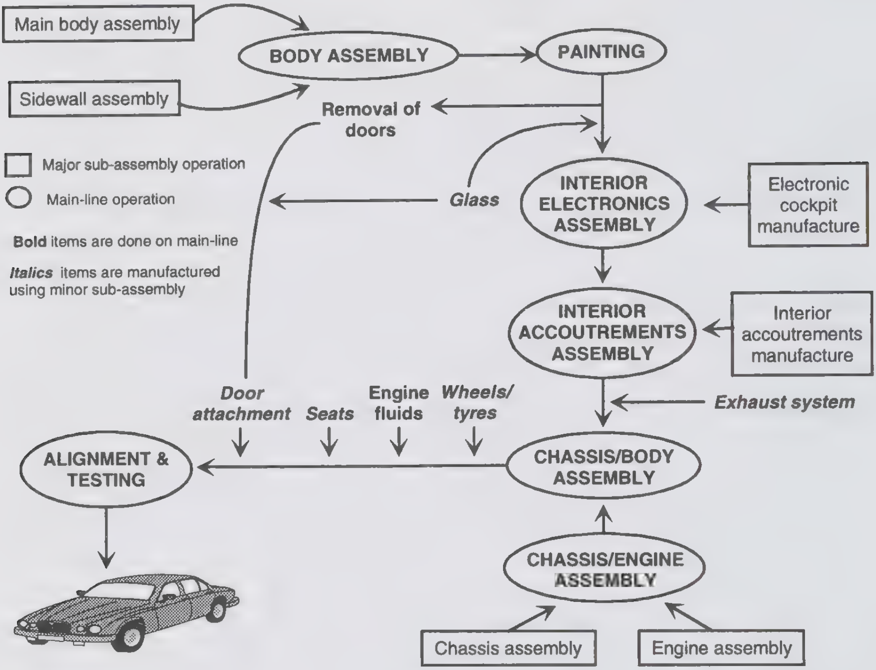
The second argument for VI, and the one that will dominate most of our discussion, focuses on the natural incentives towards VI that arise in a competitive market. The question of why firms would have an efficiency incentive to integrate vertically goes all the way back to Adam Smith. In *The Wealth of Nations*, Smith talked about the specialisation of labour and production as the driving force in the formation of the firm. But what Smith was unable to answer, and a question economists have grappled with for two centuries, is why all the specialised links in the production chain had to physically be part of one firm. To date the most sensible answer seems to centre around two primary drivers of vertical integration: *joint production economies* (JPEs) and *trade in intermediate products* (TIPs). Joint production economies refers to the efficiency gains associated with the linking of production between stages in a production or resource transformation process. It is concerned with the pure economies of scale and scope that would be achieved through the integration of otherwise independent production and value activities. Trade in intermediate products refers to the transfers that occur between stages in the process of providing a final good or service to a customer. It includes not only trade in physical goods but the sharing of tangible and intangible assets. The discussion of this driver is generally associated with the issue of market failure we gave prominence to in chapters 2 and 4.

Joint production economies

Let us consider the production of a motor car. The production process requires literally thousands of different steps, most done in some logical sequence. However, many of the production steps in making a motor car can actually be done in parallel and physically separated from those processes that need to be done in sequence. Today, most of these parallel activities would be delegated to specialised suppliers. In the past, they were handled by wholly-owned subsidiaries.

Figure 8.2 presents a simplified description of the flexible manufacturing system (FMS) in use at Opel's Eisenach plant in Germany, probably one of the most advanced in the world. The key to understanding the impact of JPEs on

Figure 8.2: The Opel Eisenach production system


Main body assembly
BODY ASSEMBLY
PAINTING
Sidewall assembly
Removal of doors
☐ Major sub-assembly operation
○ Main-line operation
Bold items are done on main-line
Italics items are manufactured using minor sub-assembly
Glass
INTERIOR ELECTRONICS ASSEMBLY
Electronic cockpit manufacture
INTERIOR ACCOUTREMENTS ASSEMBLY
Interior accoutrements manufacture
Door attachment
Seats
Engine fluids
Wheels/ tyres
Exhaust system
ALIGNMENT & TESTING
CHASSIS/BODY ASSEMBLY
CHASSIS/ENGINE ASSEMBLY
Chassis assembly
Engine assembly

Source: Opel Eisenach plant.

this process is to notice that only those processes that have a direct cost impact on one another need to be considered as part of a single operation. In other words, only if the economies of scope from production are inter-divisional (or inter-personal) would there be a reason to physically merge the operations. For two divisions to consider vertically merging operations a necessary condition must be that:

cost (operating A) + cost (operating B) > cost (operating A & B jointly).[4]

Therefore, with FMSs like that in operation at Eisenach, the assembly operations are vertically integrated in chunks—body assembly, chassis assembly, engine manufacturing, interior assembly and so on. Complex systems that can be completely outsourced, such as electronic subassembly for dashboards and seat manufacture, are contracted completely with suppliers. Other subsystems, such as engine manufacture, are quasi-contracted with suppliers into a just-in-time system. As noted by Johnston and Lawrence,[5] the de-integration of the value chain, as exhibited by the Eisenach facility, arises because of the changes in information management and technology that improve the economies of small scale while at the same time allowing for the unprecedented sharing of information. Both of these factors lead to a level of co-ordination in the marketplace that once could only be achieved through internal bureaucratic control.

The unanswered question is: from where do JPEs come? We can generalise from our motor car example and summarise the two main types of JPEs driving VI as follows:

- *If the number of transactions between specific links in the value chain is large and repetitive* (as would be seen on an assembly line) then it is likely that there are real gains from co-ordination, the reduction of numerous intermediate transaction costs (such as paper work, specific quality control checks, the search for suppliers, transport between facilities) and the sharing of administrative overhead.
- Internal control and co-ordination may occur because *joint ownership facilitates communication and co-ordination* between points in the value chain. Managers may avoid the sub-optimisation of plant loading and process scheduling likely if the activities are part of separate enterprises. This is more likely to be necessary when the manufacturing system cannot control this co-ordination through contracts and linked computer systems.

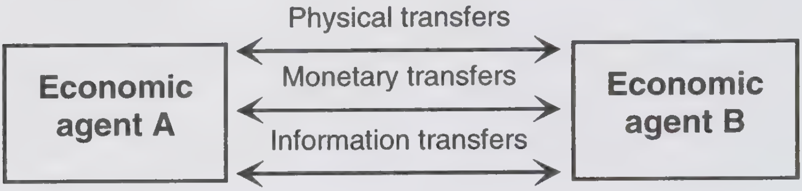
Trade in intermediate products

The second key to understanding VI is understanding the characteristics of the intermediate products and assets being transferred between economic agents at each stage in the value chain. For our purposes it is useful to distinguish between three types of transfer: *physical transfers*, *monetary transfers*, and *information transfers*. Each of these transfers is unique in the sense that its characteristics help us understand when it pays for the economic agents (A & B) to merge their operations rather than transacting in the open market.

Physical transfers are the most obvious and include finished and unfinished goods, quantifiable services, materials, hours of quantifiable and marketable labour and other items that can be quantified in a market form. It can also cover the sharing of physical assets like property, plant and equipment. Most physical transfers have the characteristic that they are relatively easy to price since they generally have some market equivalent.

Monetary transfers represent the passage of cash or monetary equivalents between agents. These may include the physical transfer of money in payment

Figure 8.3: Types of transfers among economic agents



for goods or services, or the book transfer of accounts between divisions of a company. Like physical transfers, most monetary transfers can be done at arm's length in a market, should a company choose to do so.

Information transfers are the most amorphous of the transfers that occur between economic agents. Information transfers can be as direct as the use of market research information by the marketing and distribution division or as vague as the transfer of the corporate culture associated with training. Information transfers would encompass product and customer knowledge, production and selling skills, managerial skills, technological knowledge and the sharing of intangible complementary assets, to name only a few examples. Almost all information transfer is embodied in human capital, although some may be associated with information technology systems and physical goods. Some information transfers can be priced, while most have the characteristic that they are public goods[6] and are thus difficult to price in a more traditional market.

In chapter 4 we referred to three factors as driving vertical integration—*taxes*, *co-ordination* and *market failure*. Each of these is related to trade in intermediate products and our discussion of JPEs. Our discussion of JPEs covered the issue of co-ordination. Below we cover taxes and market failure in relation to TIPs.

Taxation and vertical integration

If we were in a world where there were no taxes and no information, VI would be driven wholly by JPEs. Activities that were repetitive and standardised would be integrated while relatively infrequent and customised activities would be transacted through contracting in the marketplace. Only physical and monetary transfers would be important and the economics of co-ordination and economies of scope would become the dominant incentive for VI. However, in a world with taxes, companies can have an incentive to integrate vertically to avoid taxation. Under these circumstances, monetary transfers play an important role as a driver of VI.

The most obvious tax-based VI incentive is to avoid sales, excise or

Table 8.2: Price, cost and profit in a non-integrated company

	Price	Cost	Profit	Profit after tax
Company A	$50	$40	$50,000	$45,000
Company B	$100	$95	$25,000	$18,750
Company C	$150	$135	$75,000	$37,500

transaction taxes. Since many countries and locales tax market transactions but ignore intra-company transfers, companies with a large number of market transactions in high transaction tax areas have an incentive to internalise these market transactions to the maximum extent possible. Unlike other transaction taxes, true value-added taxes (as opposed to many taxes referred to as such) are VI neutral since they technically only tax the value added at each stage of production. Since tax-driven VI would not change the structure of the value activities (as the total value added would always be independent of the structure of the company), there would be no tax gain from integrating under these circumstances.

Income and profit taxes will have no effect on integration as long as the taxes are uniform across profit levels (because the tax system is not progressive or different tax locales do not charge different rates) and symmetric (as they treat losses and gains the same). Progressivity and unsymmetric systems can create incentives for integration. Take the simple example of three companies that work together to produce a final product under the conditions outlined in table 8.2. Each company operates in a different tax regime (tax rates of 10 per cent (A), 25 per cent (B), and 50 per cent (C)). Five thousand units of intermediate products are transferred between the companies, each of the prices is market determined and tax losses cannot be transferred across tax regimes. Clearly these companies have an incentive to merge to engage in tax arbitrage (assuming the tax authorities do not catch on). The profit and transfer prices of the new company are shown in table 8.3. By integrating operations and taking advantage of tax arbitrage, the profits of the three companies can be increased from $101,250 to $135,000.

Although tax incentives appear to be a fairly clear reason for VI, most people recognise that tax incentives alone, unless the burden is especially onerous, play no part in a company's decision to integrate vertically. In developed countries, the tax regimes are quite similar and the countries normally have joint taxation agreements. Coupled with the fact that tax rates can change quite suddenly,

Table 8.3: Price, cost and profit in an integrated company

	Price	Production cost	Total	Profit after tax
Division A	$70	$40	$40	$135,000
Division B	$115	$45	$115	$0
Division C	$150	$35	$150	$0

taxation differences are not sufficient, alone, to have a major impact on VI. They do, however, provide an added bonus associated with VI when considered along with the JPEs and market failure drivers.

Market failure and vertical integration

As we noted in chapter 4, market failure appears to be the dominant determinant of vertical integration and our transaction cost economics (TCT) approach is useful in helping us understand the rational drivers of VI. We can zero in on four factors that lead to the market failure features of VI: small numbers contracting, large-scale asset specificity, uncertainty (or information impactness), and opportunism. In combination, these factors lead to circumstances where *market transactions (or contracts) are incomplete*—the contracting agents cannot sufficiently specify the circumstances that are necessary to make the transaction (or contract) acceptable to all the parties to the arrangement.

Market transactions can be incomplete in two ways—with respect to *incentives* or with respect to *profit sharing*. In the first case, the incentives of the contracting parties are sufficiently divergent that neither can be trusted to engage in behaviour that is in the agreement's best interest. In the second case, the parties cannot agree on an appropriate sharing of the costs and benefits of the arrangement.[7] In both of these situations, joint ownership may be the only feasible alternative available to make the transaction possible. Market failure is associated with small numbers contracting and asset specificity problems on the one hand, and information impactness on the other. The former can arise in situations associated with physical and information transfers while the latter is normally associated with the transfer of intangible knowledge and information.

The most extreme case of small numbers contracting is bilateral monopoly. We will focus our discussion on this extreme example keeping in mind that it can be generalised to situations with small numbers of economic agents. Bilateral monopolies arise in markets where there is one buyer and one seller. Without going into all the gory details, there are two general characteristics of a bilateral monopoly. The first is that there are gains to trade, in other words, the transaction between the two parties has value to both. The second is that who gets what portion of this gain is indeterminate. Consider the case of a borrower and a bank. The borrower and bank engage in a series of transactions, the granting of a line of credit and other banking activities. As the relationship between the two extends in time, the arrangement takes on the characteristic of a bilateral monopoly. Since the lender has more information about this specific client than a random potential customer, the lender is better off maintaining the arrangement than starting a new relationship. The borrower has shared private information with the lender and is, therefore, better off remaining with this bank than going to another bank and being treated no differently than a random new customer—the borrower would have to start the relationship anew. Although it is clear to both parties that they are better off with one another than setting up new arrangements, it is equally clear that friction will exist. The borrower will threaten to go to another bank unless the loan terms are improved, while the bank will attempt to take advantage of the borrower by keeping fees higher than the customer's quality justifies.[8]

Although the bank–customer example has all the characteristics of a bilateral monopoly, it still does not lead to VI between the borrower and lender since the arrangement between these parties is a small portion of the total value of each of the organisations. It would hardly make sense for the bank to link itself permanently with all its clients nor would it make sense for the customers to link up with a bank that might only be providing 1 per cent of its value. So *small numbers contracting is a necessary but not sufficient condition for VI.* The other major condition is the existence of large-scale asset specificity.

Large-scale asset specificity refers to the commitment of a significant percentage of the firm's fixed assets to a specific purpose. There is also the implicit assumption that this commitment cannot be easily or quickly reversed. In the VI case, it refers to the commitment to a partner upstream or downstream on the value chain. Stuckey and White[9] distinguish between three types of asset specificity:

- *site specificity*—the commitment to locate a facility near a supplier or buyer (e.g., automobile suppliers locate their operations near assembly plants);
- *technical specificity*—the commitment to invest in a technology to match that of a supplier or buyer (e.g., software companies must commit themselves beforehand to write software that operates on specific microprocessors);
- *human capital specificity*—the commitment to develop skills consistent with the needs of a supplier or buyer (e.g., software programmers must tailor

their skills to writing programs that run under Microsoft Windows; Microsoft in turn commits itself by subsidising training seminars and development kits).

In the case of large-scale asset specificity, when one party (A) commits itself to an endeavour it recognises that it can be immediately expropriated by the more flexible partner (B). It, therefore, wants the partner (B) to take an equity position in its operations (A) so that it is protected from bad behaviour on B's part. A will usually want to also take a position in B so that, if B behaves badly, A gains through its holdings in B. When both parties must commit themselves to specific assets, VI is a way of sharing the bilateral monopoly profits. Under these circumstances it does not matter whether the profits go to A or B since both share in any gains.

The most clear-cut cases of asset specificity exist in resource-based industries. Case 8.2 provides a discussion of one of the more compelling examples of how asset specificity can come to define the structure of an industry.

Case 8.2 Vertical integration in the aluminium industry

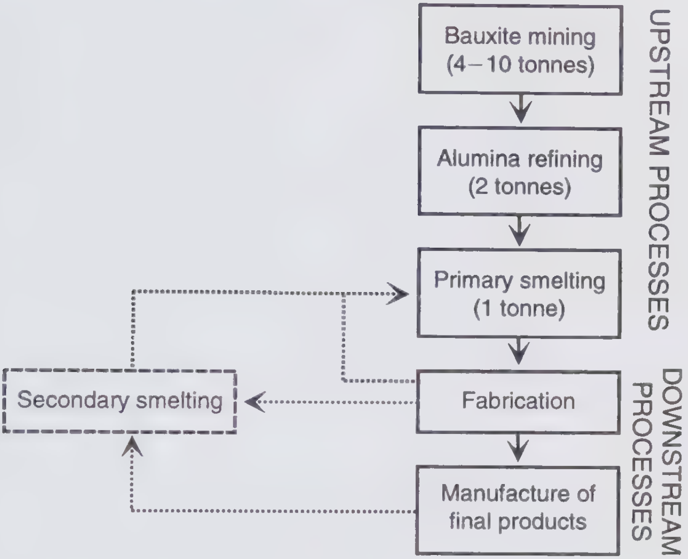
Conventional explanations of vertical integration in the aluminium industry focus on factors such as 'guaranteeing sources of supply' or 'securing reliable markets'. However, on closer examination, two core factors are responsible for the vertical structure of the aluminium industry: asset and process specificity, and heterogeneity of inputs and outputs. These characteristics of the industry lead to market failure due to spatial immobility of the assets and small numbers contracting.

The production of aluminium products involves a series of technical processes ranging from the upstream mining of aluminium ore (bauxite) to the downstream manufacture of a wide variety of durable items. Traditionally, upstream processes include bauxite mining, alumina refining and primary metal smelting, while downstream operations refer to secondary smelting, fabricating and end-product manufacturing. These stages are illustrated in the figure on the next page.

A feature of the upstream aluminium industry is that it is highly integrated vertically. Operationally, this means that aluminium firms have significant ownership interests in the facilities of at least two of the upstream stages of production. Why is this the case?

We noted earlier that a necessary condition for VI is that individual components of the value chain are more profitable when linked than when separate, provided that the gains that exist are not subject to an acceptable external market contract between producers. In the aluminium industry, the processing of upstream products would be open to external spot contracts if such products were homogeneous within production stages. However, this is not the case.

The aluminium processing chain



Considerable variations in the composition of bauxite often require specialist technologies and facilities in the refining process. Crucial to refinery design is the alumina content of bauxite, which occurs in hydrated form in the ore as either alumina trihydrate or alumina monohydrate. Essentially, the refining process separates the alumina from the water. While it is technically possible to process any bauxite in any refinery, inefficiencies arise from mismatches between the process and the input. For example, if trihydrates are run through a refinery designed for monohydrates, alumina yields would be substantially lowered by the higher than necessary temperatures.

Individual bauxite mines and alumina refineries are locked together vertically since, if a refinery were forced to switch its source of bauxite, it would face either increased operating costs or, in the extreme case, prohibitively expensive plant modifications and shut-down time.

Likewise, but to a lesser extent, alumina is also a heterogeneous mineral, and smelters designed to process sandy aluminas differ markedly from those designed to operate with floury aluminas. Such segmentation rigidities make it difficult to substitute aluminas in the smelting process.

In the absence of VI, the heterogeneity of bauxites and aluminas and their specific processing requirements would, in the extreme, lead to the establishment of a series of bilateral monopolies within the industry. Faced with this situation, a bauxite miner would have only one possible outlet, while an alumina refiner would have only one source of supply. Both producers would then be faced with the dilemma of frequently renegotiating arm's-length, spot transactions. The desire to avoid such transaction costs is a strong incentive for VI. Further justification is found in the substantial financial risk associated with independent upstream operators, in the form of exploitation by more powerful bilateral partners. In reality, pure bilateral monopolies are uncommon in the aluminium industry but bilateral oligopolies do occur.

Structural failure within the market itself is also a driving force for integration. Refineries and smelters are high-value assets that are spatially immobile, long-lasting and industry-specific (i.e., they have little use outside the aluminium industry). These features constitute high barriers to exit and, coupled with the other rationales described above, provide a strong additional reason for firms to integrate vertically across upstream processes.

Source: Adapted from J. Stuckey, *Vertical Integration and Joint Ventures in the Aluminium Industry*, Cambridge MA: Harvard University Press, 1983.

Our discussion to this point has focused almost exclusively on physical transfers. However, some of the strongest motives for VI are based on information or intangible asset transfers. As noted in the discussion of chapters 2 and 4, information is one of the most critical components of the operations of a company—we would go so far as to say that it is the lifeblood. It is not only an input but is an output that is jointly produced with the physical output of the firm. However, unlike the physical inputs and outputs, information has two unique characteristics.

First, *information is amorphous and tends to be jointly produced.* Information is rarely created independently of individual and group human capital, the culture of the company, and the physical production of products and services. You simply cannot have information without the production processes and people associated with creating and using that information. Information is like an electron—it is only there or not there when you measure or attempt to use it. Second, *information can be both specific and generic.* Firm-specific information is a public good within the firm but is unique to the firm. Therefore, it has value internally but less value externally. Generic information has value both within and outside the firm. Firm-specific information might be knowledge related to a production process that is specialised for the firm. Yes, competitors might like to know it, but they cannot use it with their production technology. Generic information is information that can be generalised across production technologies. A competitor who could get his/her hands on this information would have gained, or mitigated, an advantage at little or no cost.

These characteristics imply that the market for information and intangible know-how is likely to be incomplete. Since information is embodied in people and processes, it cannot be easily created, but since it is a public good it can be easily disseminated. Users will not be willing to compensate producers for the sunk cost of having created the information. In addition, once the information is passed on, the producer loses control of the information since it can now be easily passed on further. So when TIPs involves information and intangible know-how, it is subject to market failure. For this reason, organisations where information is the major intermediate product in the value chain are candidates for VI.

Consider a simple example. The pharmaceutical industry is interesting because of its mixture of vertically integrated and non-vertically integrated operations. The most important attributes of ethical pharmaceuticals are their therapeutic value and their side effects. Different drug companies make highly differentiated products with active ingredients that are complex and quite difficult to synthesise. The processes used to synthesise the active ingredients in drugs are frequently excluded from patent applications in an attempt to keep them proprietary. One can think of an ethical drug as being some part active ingredient and some part bulk chemicals. Since the bulk chemicals component is generic, and a single manufacturer rarely uses the output of an entire plant, it is normal for most companies to purchase their bulk chemicals on the open market.

There are two characteristics of VI in the ethical pharmaceuticals industry. On one dimension, the need for manufacturing precision and product differentiation implies that drug companies would want to control not only the development but also the production of bulk pharmaceuticals. The need for secrecy is an additional incentive towards direct production since, for many drug formulations, the nature and synthesis of the active ingredients is the only competitive advantage available to the firm. Therefore, for products where the active ingredients are synthesised using well-known processes, the drug companies should either sell their excess bulk capacity to competitors or source from licensed suppliers. In situations where this is not the case, the firm should maintain all production in-house. On the other dimension, there is little need for pharmaceutical manufacturers to integrate into chemical production, since it is unlikely that any one drug company could fully utilise the capacity of even a relatively small chemical plant. However, chemical companies clearly see opportunities for product differentiation and R&D synergies between their chemical operations and pharmaceuticals. For this reason, Du Pont, Dow Chemical and Monsanto have all moved to integrate their chemical operations with pharmaceutical development and production through the purchase of drug companies and developing joint ventures.[10]

In the ethical pharmaceuticals industry there is a great deal of VI but little evidence of any JPEs since most inputs could be sourced in competitive markets and most distribution could be done through some combination of in-house distribution and wholesalers. The driving factor behind VI in this industry is the nature of the information as an intermediate product. R&D and production need to be linked since the capabilities of the company that give it a competitive advantage are embodied in sensitive information and procedures that could be copied.

Summary

We can summarise our discussion by outlining five major requirements for rational vertical integration.

- The commodities exchanged are ambiguously defined (TIPs is incomplete).
- The commodities exchanged have public good aspects (TIPs is incomplete).
- Firms possess joint assets (JPEs exist).
- Contractual obligations extend in time (the transaction is repeated).
- Strategic/opportunistic behaviour exists amongst agents in markets (contracts are not completely enforceable in the open market and the number of parties to the transaction is small).

In one of the more comprehensive studies of VI, Kathryn Harrigan[11] provides empirical support for this viewpoint of vertical integration. In a study of almost 200 US firms, she finds strong support for JPEs and TIPs as the main drivers of VI. The extent of VI was not related to many of the factors that some writers have espoused, such as size, market uncertainty or the availability of resources. VI appeared to be most strongly driven by five factors:

- the specificity and fixity of assets (as measured by exit barriers) (TIPs);
- synergies with upstream and downstream business (JPEs);
- product heterogeneity (TIPs);
- the concentration of distributors and suppliers (TIPs); and
- the level of integration of competitors in the industry.

Although Harrigan did not have direct measures for many of the constructs we have discussed, it should be clear that industry structure pressures are a primary determinant of the degree of VI. Her findings show that while there is a mix of VI strategies pursued by different firms in the same industry, the industry itself determines which companies tend towards greater amounts of integration. Whether this is rational behaviour or irrational managerial herding is open to speculation.

The dark side of vertical integration

Up to this point, we have taken a pure market-efficiency-driven position with respect to vertical integration. However, it has long been argued that firms engage in VI as a means of reducing competition in the industry and raising barriers to new entrants. This viewpoint is independent of any of the rational reasons for VI that we have discussed. The exclusionary perspective is based solely on the belief that firms can restrict supply and monopolise an industry through VI. This argument is basically incorrect, although there is some credence to the fact that VI can slow entry and facilitate collusion in markets with a natural (or rational) tendency towards concentration.

The exclusionary argument for VI comes in two forms: firms can extend their monopoly by acquiring downstream firms (such as producers purchasing distributors and retailers), and firms can capture upstream supply sources, thereby excluding competitors from the materials needed for production (through the purchase of sources of supply). There are three reasons why this does not work.

First, the company sacrifices profitability by attempting to monopolise more than one link in the value chain. When taken as a whole, there is a general rule that says that the maximum profits are received from a chain of activities by monopolising one and only one link in the value chain. The empirical evidence is consistent with this point; however, courts have a tendency to misread the signals. For example many vertical mergers are of large companies with adjacent operations. In one of the more famous cases,[12] the US Supreme Court ruled that Brown Shoe, the fourth largest shoe manufacturer in the US, was attempting to restrict access to retail markets by the purchase of the retailer Kinney Shoes, the largest independent shoe retailer. In reality, Brown Shoe acted in a manner that was consistent with any firm facing a downstream monopoly—vertical integration. In general, the courts in most countries have taken a dim view of Brown Shoe-type mergers even though they tend to be driven by strong efficiency motives. A more detailed example of this issue is given in Case 8.3, the Du Pont/GM case.

Second, the firm that monopolises the downstream or upstream activities and excludes competitors is likely to suffer significant diseconomies of VI since it will, by definition, be reducing the flow of products and services through the stages of the value chain. For example, distribution systems working efficiently at 90 per cent capacity would find themselves operating with significant excess capacity once competitors' products were excluded. Suppose a producer purchases all the retail outlets for a particular group of products and excludes the 40 per cent of turnover associated with competitors' products, even going so far as reducing the number of retail establishments. Its competitors then have no choice but to open their own outlets or go out of business. The end result is a series of less than fully efficient retail operations with all the producers now operating at higher effective costs than when there were only independent retailers.[13]

Third, if the firm attempts to take monopolistic advantage of its new vertically integrated status by raising its price, it induces entry. Either its competitors or independent downstream and upstream operators will enter to replace the capacity taken from the market by the vertically integrating firm. The newly entering firms would be at least as efficient since the reason for VI in the first place was not efficiency but the desire to restrict supply. A classic example of this occurred when J. D. Rockerfeller attempted to purchase a majority of the oil refining capacity in the US at the turn of the century. What Rockerfeller found was that, as he was purchasing refineries, many of the people he was buying them from were going out and building new ones![14]

Case 8.3 Du Pont/GM—does vertical ownership restrict competition?

In 1957, the United States Supreme Court found Du Pont in violation of Section 7 of the Clayton Act through its holding of a 23 per cent share in General Motors Corporation (which it obtained in 1915–17). The Court ruled that Du Pont acquired and used its position with GM to extract advantageous terms and dominate the supplying of paints and fabrics to the company. A large part of the Court's conclusion was based on the fact that Du Pont was not a major supplier to GM until after it acquired its financial position in the company. Is this the right conclusion?

On the one hand, it can be argued that Du Pont was protecting itself against opportunism on the part of GM in the auto finishes and fabric market. Du Pont sold GM two paint products, Duco and Dulux. Duco was a patented quick drying and durable lacquer used on motor cars and recognised as the highest quality product on the market. Dulux was a synthetic enamel used by GM's Frigidaire appliance division. Dulux's main competition was from the growing use of porcelain as a substitute for enamel paint. These two divisions accounted for approximately 71 per cent of Du Pont's paint sales to GM. The company also sold treated fabrics to GM and these sales represented the dominant portion of its fabric division's sales. On the other side, GM sourced 67 per cent of its paint sales and 39 per cent of its fabric sales from Du Pont.

Du Pont's position vis-á-vis GM was precarious. Although it sold paints and fabrics to other motor car manufacturers, all the manufacturers had a host of alternatives available. Indeed, the Oldsmobile and Cadillac divisions switched to a paint competitor, Rinshed-Mason, in 1927. Ford began its own internal production of treated fabrics in the 1920s turning to Du Pont only to meet shortfalls in capacity. In the early 1930s, Chrysler switched all its paint purchases from Du Pont to PPG and its fabric purchases to Textileather in pursuance of a policy to obtain suppliers to whom it would be the most important customer. Du

Pont, it could be argued, needed to protect its position relative to its most important customer. GM, although it continued to purchase a major percentage of its requirements from Du Pont, could easily switch suppliers leaving Du Pont with substantial losses on an enormous fixed investment.

But this is not the only argument made for Du Pont holding an equity position in GM. Suppose that Du Pont produces Duco at a cost of $400 and sells it to GM for $500 (its patent and quality allows Du Pont to command a profit). GM could get a similar paint for $300 from a Du Pont competitor. GM produces a car at a cost of $5,000 and sells it for $6,000. Jointly Du Pont and GM earn profits of $1,100 = $6,500 – $5,400. But suppose GM substituted the competitor's paint. Profits rise to $1,200 = $6,000 – $4,800. This is proof of the general argument that a monopolist would never want to extend its monopoly vertically. However, the Du Pont/GM case has an extra special wrinkle—Du Pont only owns 23 per cent of GM. Under these circumstances, Du Pont's profit is $330 (= $100 + 0.23 x 1,000) and GM's profit is $770 for every Du Pont painted car sold. If the competitor's product is used, Du Pont earns $276 and GM's profit rises to $924.

Which story is correct? Both. The question that needs to be addressed is: which incentive is dominant—the incentive to please Du Pont or the incentive to please the owners of the remaining 77 per cent of the company? Note, however, that if GM's management was sufficiently savvy, it could please everyone. You should recognise that GM's profit increase of $154 is greater than Du Pont's profit decline of $54. Savvy management would pass on the extra $54 to Du Pont, leaving Du Pont indifferent and still having $100 to share amongst the remaining shareholders. Du Pont's partial ownership makes it possible for it to extract some of the gains from GM's other shareholders but it too would want GM to operate at maximum profitability! Therefore, even if Du Pont did have undue influence over GM's management, it is unclear that it would use that influence to force them to make poor material sourcing choices. What is clear is that it would use its position as a supplier to extract more than its fair share of GM's profit.

Source: United States *vs* E. I. Du Pont de Nemours & Company, 353 US 586, 77 S.Ct., 1 L.Ed.2d. 1057, 1957. Case sourced from R. Posner, *Antitrust Law*, Minneapolis MN: West Publishing, 1974.

VI can, however, have two anti-competitive effects. First, it can slow the rate of entry or expansion by increasing the required capacity of all firms in the industry. Since new firms, or firms expanding capacity, must now increase capacity across a vertically integrated spectrum of activities, they require more direct capital and entry and expansion are thereby slowed. So a clothing manufacturer in a non-integrated market would only have to worry about expanding production capacity, leaving it to the independent distribution channel to react to its expanded production. If the industry was vertically integrated, this same manufacturer would need to increase production and retail operations at the same time. Note that this is a double-edged sword for the integrated companies. Not only is expansion and contraction slowed for the entering firm but for all firms in the industry. Second, by forcing the firms into less complex and more standardised organisation structures, VI can increase the likelihood of effective collusion. A smaller number of VI firms represents a more stable and easily monitored situation than does a market with hosts of independent producers and distributors.

Vertical integration strategy

Our discussion has provided some clear reasoning as to why a vertically integrated company is formed. At this point, we need to move from the *why* of VI to *how* to build an effective strategy based on VI.

Different types of vertical integration

Let us begin by extending our definition of VI to include cases of less than total integration. Until now, it has been assumed that VI means the total joining of one or more links in the value chain. In reality, many, and perhaps most, cases of VI entail only partial integration. Cases of partial integration include vertical joint ventures (JVs) and alliances, franchises, exclusive dealerships and supply relations, as well as minority equity participation in upstream and downstream firms. Harrigan[15] develops a useful taxonomy for classifying vertical relationships:

- *Full integration* (FI)—the total integration of adjacent links in the value chain. The vertically integrated firm accepts all risks and bears all the rewards associated with its operations.
- *Taper integration* (TI)—firms are partially integrated vertically but purchase or sell some portion of their requirements through specialised suppliers and distributors. The taper-integrated firm protects itself from market fluctuations by being under- or over-capacity relative to market demand.
- *Quasi-integration* (QI)—firms are the partial owners of upstream or downstream operations. The QI firm receives partial managerial control from ownership of upstream or downstream operations but also shares some portion of the return and risk. QI includes franchise, minority ownership, JV and other similar limited ownership relationships.

Taper integration is beneficial when there are no significant diseconomies from being above or below market efficient capacity and when some, but perhaps not a great number of, alternatives exist with respect to the company's integrated operations. For example, many clothing manufacturers pursue TI strategies. Hart, Schaffner and Marx, the American men's suit manufacturer, sells both through its own stores and through licensed retailers. The existence of a sufficient number of reputable retailers allows HSM to pursue the taper integration strategy.

The quasi-integration strategy is valuable when minority ownership provides a sufficient incentive for the contracting parties to remain honest and committed to the arrangement and when different parties bring their own non-marketable intermediate products to the arrangement. For example, most franchise arrangements exist around two main resources—the process and product requirements of the franchisor and the local knowledge and investment opportunities of the franchisee. It is not uncommon for franchisees of one restaurant group to own franchises in other restaurants. This allows the franchisor to gain from the local know-how of the franchisee while the franchisee gets to use its ability to manage a related business jointly with the advertising and other expertise of the franchisor.[16] Case 8.4 provides an example of how the quasi-integration strategy of franchising is used by companies to control sensitive assets and align the profit incentives of their franchisees with their own goals.

Case 8.4 Franchising the McDonald's way

When Ray Kroc formed McDonald's System Inc. in 1955, he was among a dozen or so entrepreneurs who were seeking to extend franchising into the fledgling fast-food business. What set McDonald's apart from the other operators, however, was the unique system of franchising which it offered. Basically, it was Kroc's desire to build a lasting fast-food business distinguished by uniformity and quality in its service and products. In line with this, he demanded much more control over the system than other franchisors did and, in return, he was willing to sacrifice the quick franchising profits that others were making at the time.

In all other franchising schemes, franchisors made their profits before their franchisees did, either by selling franchise territories to investors for huge up-front fees, or by supplying franchisees with food, paper and equipment—usually at mark-ups that were higher than they would pay on the open market. By comparison, Kroc avoided the granting of exclusive territories and sold only single-store franchises for a set price. This was designed to encourage the success of his franchisees *first*, thus building a loyalty on which McDonald's would, in turn, prosper.

McDonald's has grown to become a powerhouse in the food services industry, controlling about 20 per cent of the $45 billion US fast-food market. Since going public in 1965, the McDonald's Corporation has enjoyed an average return on equity of 21.2 per cent and an annual earnings growth of 27.4 per cent. In 1988, it opened its 10,000th restaurant world-wide. In line with Kroc's original design, this unprecedented growth has largely been due to the company's efficient use of franchisee entrepreneurs to promote the McDonald's product.

McDonald's has always been highly selective in choosing its franchisees and, based on a reputation for making its investors wealthy, competition for available licences is keen. This is despite high entry costs for applicants in the form of substantial cash and time investments in the McDonald's system before being granted a restaurant. A rigorous training program, interspersed with ongoing interviews, tests and evaluations, generally takes place over a period of two years, with the potential franchisee working approximately 2,000 uncompensated hours in a McDonald's restaurant. This intensive time commitment in training, combined with highly specific investment requirements in fixed assets (see below), effectively binds the franchisee to McDonald's and the success of the system.

Initial cost to franchisee:

$ 22,500	fee to McDonald's
$ 15,000	Interest-free security deposit
$415,000	To third-party suppliers
$452,500	Total franchise set-up cost
$181,000	40% minimum required non-borrowed cash

Training costs of franchisee:
2 years for 20 hours/week with no compensation for time or expense

Ongoing costs to franchisee:
12% of gross sales per month
4% of gross sales for advertising
Insurance plus operating costs

Initial costs to McDonald's:

$357,000	Land cost
$551,000	Building construction

The operation of stores by entrepreneurial owner-managers allows McDonald's to achieve significant cost economies and maximise profits locationally. Information, for example, does not have to filter down through numerous hierarchical layers, but is quickly transmitted and acted upon by franchisee entrepreneurs who, acting in their own interests, allow the corporation to impose its will on the system. In the area of labour productivity, localised monitoring of staff also achieves important production efficiencies which would not normally be forthcoming in a single, large firm within a labour intensive industry. The importance of this managerial efficiency aspect is borne out by the performance of the 25 per cent of company-run stores, where profit margins rarely equal those of franchised units. This is because, even though franchisees must adhere to strict uniformity rules, their entrepreneurial drive and expertise in enhancing local demand makes all the difference.

For its part, McDonald's contributes to the system by strategically locating restaurant sites and building the structures. It also provides training, managerial advice, its trademark, product, marketing power and reputation. In addition to the initial payments it receives from franchisees, McDonald's also collects a monthly royalty based on 12 per cent of gross sales, and an advertising fee of 4 per cent of gross sales.

McDonald's maintains credibility with its franchisees by enforcing compliance to its strict operating rules. Franchise agreements are contracted for a period of 20 years, and may be cancelled or renewed at the franchisor's discretion. Moreover, additional franchises are awarded one at a time, which provides further incentive for operators to comply with the regulations and resist the temptation to free-ride.

The corporation expects total commitment from its franchisees who must be prepared to work full-time in the daily management of the restaurant. Their operations are continually evaluated on the basis of quality, service, cleanliness, personal involvement, marketing aggressiveness, realisation of potential sales, management performance, level of reinvestment, co-operation, and financial payment history. Franchisees are not permitted to sell their restaurants without written approval from the corporation. They are also denied autonomy of decision making in such areas as hours of operation, pricing, product, promotion and supply of inputs.

Yet, it is allegiance to this corporate operating regimen which forms the basis of McDonald's success. If franchises were allowed to operate autonomously within a free market situation, the value of the McDonald's product would deteriorate rapidly due to inherent free-riding problems (either on brand name or product quality) and the resultant loss of uniformity. The continuance of McDonald's success, therefore, rests with its ability to enforce the franchising contract which allows it to exercise the centralised control of a firm even though, legally, the franchisor and the franchisee are two separate entities.

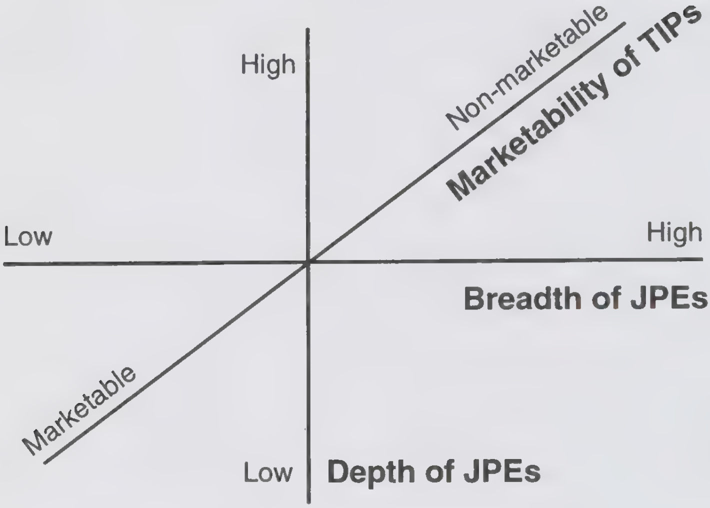
Source: Adapted from D. Noren, 'The economics of the golden arches: A case study of the McDonald's system', *American Economist*, 34, Fall, 1990, 60–64, and J. Love, *McDonald's—Behind the Arches*, New York: Bantam Books, 1986.

A vertical integration strategy matrix

The most effective form of VI for a firm will be a function of the characteristics of its JPEs and its TIPs. We can categorise the JPEs based on two dimensions—their *breadth* and their *depth*. With respect to TIPs, we are concerned only about the *marketability* of the intermediate product. Using these three dimensions, we are able to provide some normative rules for efficient VI (see figure 8.4).

The breadth of the JPEs is defined as the percentage of vertical value chain linkages that are subject to JPEs. The depth of the JPEs indicate the degree to which JPEs impact on the total operations of a link in the value chain. Therefore, in the case of aluminium fabrication, we are faced with quite high levels of breadth upstream and considerable amounts of depth. In the case of men's tailored suits, we have a situation of low breadth and low depth. Intermediate product marketability is relatively self-explanatory and represents the ability to

Figure 8.4: The dimensions of vertical integration

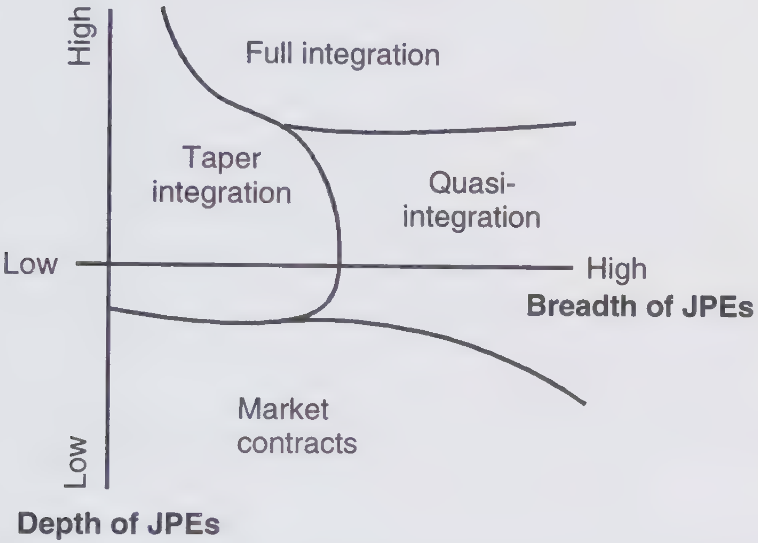


write a reasonably complete contract between the transacting parties. In the case of Hart, Schaffner and Marx (HSM), TIPs between production and sales is important because HSM needs to protect its pattern designs and is concerned about independent retailers misusing the accumulated brand capital of the HSM name.

Assume for the moment that TIPs is complete, and all we need to consider is the breadth and depth of the JPEs (see figure 8.5). As a general rule, *the greater the depth of the JPEs, the more reason there is to fully integrate related operations, particularly as the breadth of those operations expands.* Levels of intermediate to high depth create pressures for TI and QI, with TI being preferable when the breadth is low and QI when breadth is high. TI works well when breadth is low since it entails the firms integrating some operations but taking advantage of the fact that some market alternatives exist. QI works well when breadth is high since it relies on the ability of the firms to merge a host of different activities.

The strategic implications of the marketability of TIPs are a bit more complicated since the structure of the marketability has implications for the structure of the integration strategy (see figure 8.6). For example, QI strategies are really risk/return sharing arrangements and will vary from high sharing (e.g., joint ventures) to low sharing (e.g., franchises). *On the whole, as the marketability of the intermediate products declines, integration alternatives move away from market contracts and TI with QI and FI strategies becoming dominant.* As before, as the breadth and depth of JPEs rise, the impetus for full integration increases. This is particularly

Figure 8.5: JPEs and vertical integration

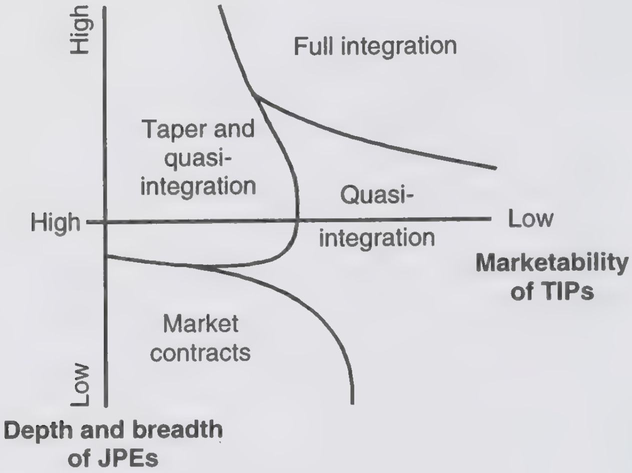


true as breadth increases (a fact not shown by figure 8.6), since the cost of managing a host of QI arrangements becomes high relative to any inefficiencies associated with FI.

One final aspect of VI strategy to consider is the *direction of integration.* Take the example of two companies making a decision to engage in a joint venture (QI) or some market transaction alternative (see figure 8.7). If the intermediate products of the companies are equally marketable, the companies should simply buy and sell them (which one does the purchasing and which the selling is immaterial). If one or the other company needed to transfer intermediate products or assets that are non-marketable, then as long as one of the potential participants had marketable intermediate products or assets, integration would be unnecessary. The company with the more marketable assets would simply license them to the company with the non-marketable assets. In the extreme situation where all the intermediate products are non-marketable, QI is the only alternative and a joint venture is created.

This last example can be generalised to the extent that we can say that the company with the greatest degree of market failure and JPEs will be the one doing the integration. In other words, *the company with the most marketable intermediate products should use market mechanisms to transfer these products and assets whenever possible.* The direction of integration should always be away from the company with the greatest ability to use the market.

Figure 8.6: JPEs and TIPs and vertical integration



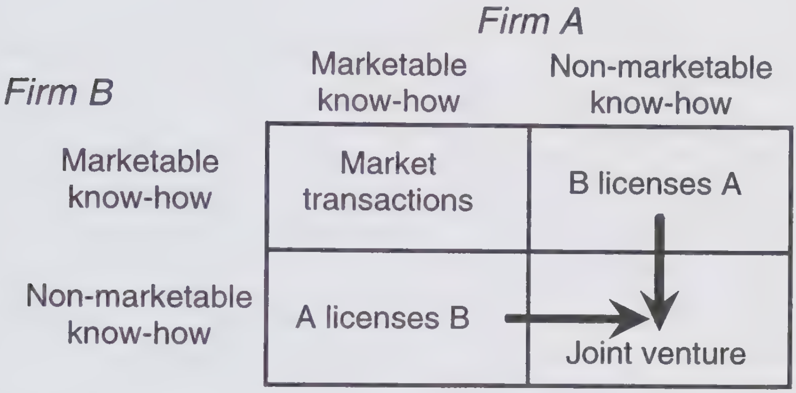
Summary—benefits and costs of vertical integration

This chapter has developed a normative strategy guide for vertical integration based on an exhaustive discussion of the rational motives for and against companies integrating vertically. We can summarise these motives simply. VI is driven by the existence of joint production economies and non-marketable trade in intermediate products and assets. The JPEs arise from the use of joint or complementary assets, such as shared production and marketing and market reputation. Non-marketable TIPs arises because of unique conditions that make market arrangements between the economic agents involved unenforceable or subject to opportunism.

A host of integration strategies is available to firms depending on the breadth and depth of their JPEs and the marketability of their intermediate products and assets. These strategies range from 100 per cent integration between links in the value chain to the less than 100 per cent taper and quasi-integration strategies. The most numerous and diverse integration arrangements are the QI strategies. These can range from small equity participation to franchising and joint ventures.

This discussion implies some distinct benefits and costs from VI (see table 8.4). On the negative side, there are three groups of costs that managers need to understand. VI alters the financial structure of the company, thereby affecting

Figure 8.7: The direction of integration strategy



Firm B \ Firm A	Marketable know-how	Non-marketable know-how
Marketable know-how	Market transactions	B licenses A
Non-marketable know-how	A licenses B	Joint venture

Source: J.F. Hennart, 'A transaction costs theory of equity joint ventures', *Strategic Management Journal, 9*, July–August 1988, 361–74.

capital and investment requirements. In addition, the need to co-ordinate the JPEs and deal with the problems of non-marketable assets and intermediate products creates management and co-ordination costs. Finally, the direct internal linkages remove the company from external sources of new ideas, sources of supply and so on, and can keep the company locked into arrangements longer than it needs to be. For example, as the acetylene market in the US declined, the companies with the fullest and least amount of VI were most effective in shedding operations. The QI companies were the slowest to change because they could not undo longstanding contractual arrangements.

On the positive side, VI bestows three benefits. Vertically integrated companies can take advantage of cost-reducing JPEs in the areas of control, information and production. Next, by integrating vertically, companies can reduce the losses associated with constant renegotiation of contracts in a bilateral setting. This increases stability and allows for future arrangements to both parties' benefit. Last but not least, VI enhances the company's ability to differentiate its product offerings by providing it with a potential source of competitive advantage in its vertical linkages. This can spur new product and process ideas and allow the company to develop unique managerial capabilities and competencies.

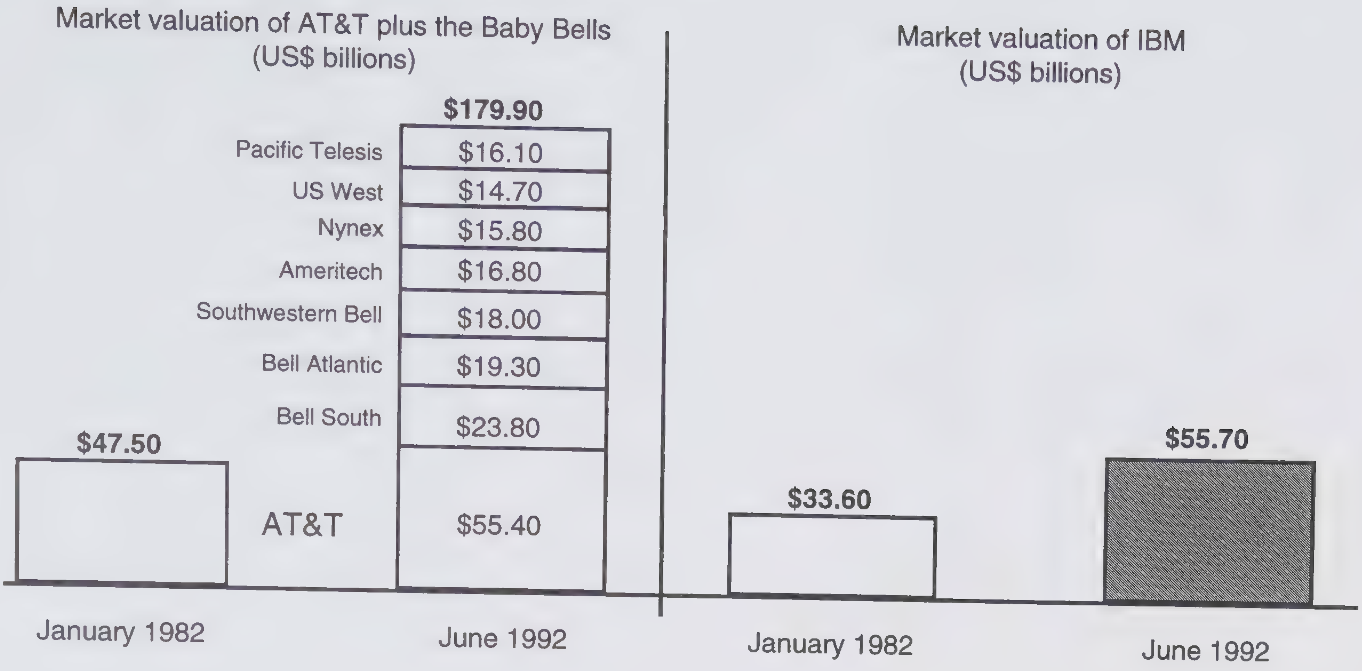
A question we have not been able to answer is: what are the tangible monetary benefits of VI? This is a difficult question to answer since the unique nature of each company, and the fact that a firm's optimal vertical structure is unseen,

Table 8.4: Strategic benefits and costs of vertical integration

Strategic benefits of vertical integration	Strategic costs of vertical integration
Economies of combined operations Economies of internal control and co-ordination Economies of information	Capital investment requirements Higher overall investment barriers Increased operating leverage
Offset bargaining power of suppliers/buyers Establishment of stable relationships	Differing managerial requirements Maintaining co-ordination
Enhanced ability to differentiate	Reduced flexibility to change partners Foreclosure of access to supplier or consumer research or technology Dulled incentives

make it impossible to have a direct basis for comparison (i.e., we cannot tell what the profits would have been had a different vertical structure been used). Not knowing what the best vertical structure for a specific company should be, all we can conclude is that, in some circumstances, one vertical structure appears to be better than another. For example, there is evidence that stock markets react quite negatively to what they perceive to be unnecessary VI. In the US, the computer company ZEOS (an IBM-clone manufacturer) attempted to remove itself from the low margins found in the clone-assembly market by integrating into components design (through the purchase of PC Tech). The stock market viewed this obvious 'search for returns' as uneconomic and proceeded to hammer ZEOS' equity, driving its price from around \$21 to \$14.[17] An even more telling comparison is seen in figure 8.8. The graphical comparison is aimed at asking a simple question: what has been the difference between IBM and AT&T stock performance during the period 1982 through 1992?[18] Now there are many different reasons for the differences in stock price performance between the two companies, but the contrast in the two companies' valuation at least hints at the possibility that the de-integration of AT&T had real market value. This immediately raises the question of whether or not breaking up IBM would be in

Figure 8.8: Integration and the value of IBM and AT&T



the shareholders' best interest? This is, of course, an open question, but one worthy of speculation.

To a great degree, the notion of 'pure' VI is becoming passé. Just how interdependent must two operations be before we call them vertically integrated? Is ownership necessary for us to consider operations as vertically integrated? The questions are, in our opinion, moot, since the vertical and horizontal dimensions on which companies operate cannot be easily dichotomised, nor is there any reason why we might want them to be. Today, suppliers and customers and customers' customers mingle and interact. They form alliances—sometimes for moments, sometimes for years—then move on. Much of this interplay is driven by the pace of the marketplace, but the pace of the marketplace is itself driven by the necessity of ever tighter and more efficient transactions along the value chain. In the end, we must look to the fundamentals associated with the JPEs and the TIPs that pressure companies towards one vertical structure over another at any point in time. What modern information and organisation technology makes possible is not the emerging of a new structure of VI, but a world where companies can alter their vertical structure more quickly and transparently than ever before.

Chapter 9

The strategic gains from horizontal integration and diversification

> *Work, itself, is not organised as it used to be. Organisations are not now drawn as pyramids of boxes. [They] now have circles and amoeba-like blobs where boxes used to be. It isn't even clear where the organisation begins and ends, with customers, suppliers and allied organisations linked into a varying 'network organisation'.*
>
> Charles Handy, *The Empty Raincoat* (1994)

The acid test of competitive success is the ability of the firm to generate cash flow for the shareholders in the long run. Yet the successful firm ultimately runs into barriers defined by the natural limits of expansion in its chosen domain. Some companies, such as General Motors, Toyota, Boeing and Microsoft, have remained focused due to the unique nature of their business. GM, Toyota and Boeing are in large fixed cost businesses with little relevant spillovers and mature demand, while Microsoft operates in a market still in the growth phase of its industry life cycle. It would hardly pay for Microsoft to abandon the growing software market to move on to some other venture. However, even these companies have 'diversified' themselves over the years. Boeing moved from military applications to civilian airline production after World War II. Although done at different points in time, both Toyota and GM have expanded their model base and moved production to new markets. Microsoft moved out of operating systems into spreadsheets, word processing and database management programs, and is now expanding its presence in the network architecture market.

At some stage in the firm's development, management faces a critical decision: do we pay the net cash flows out as dividends or do we seek new investment opportunities? Rarely, if ever, does management make the decision to liquidate the company, believing that new investment opportunities always exist. Some experts view this as little more than managerial hubris sustainable only by the inability of shareholders to police management effectively.[1] Classic examples of unjustified investment include the expansion of American cigarette companies, Philip Morris and R. J. Reynolds, into food operations. In both cases, the companies were generating enormous positive cash flows due to the structure of their tobacco operations. Rather than pay out the money to shareholders (who could have reinvested it and achieved a return of around 14 per cent), both companies expanded into food operations that earn, at best, 5 per cent. Of course, management is not so naive as to believe that it can simply spend shareholders' money without some justification. Therefore, it justifies its investments based on synergy. In both the Philip Morris and R. J. Reynolds expansions, the synergies were argued to be in marketing and distribution, although one would be hard pressed to find Nabisco managers or workers who knew anything related to cigarette production or sales and R. J. Reynolds' executives and managers who understood the intricacies of the biscuit and cracker market. The same can be said of Philip Morris. Which capabilities built up in cigarette production and sales can be transferred to the beer (Miller Brewing) and cheese (Kraft) markets?

The difference between the Boeing-GM-Toyota example and Microsoft example and the Philip Morris-R. J. Reynolds example is that the former based their expansion into new products and markets on the distinctive skills and competencies of the firm as they related to new markets or products while the latter based their expansion on the necessity of spending the cash that was pouring out of their base operations in cigarettes.[2] The Boeing-GM-Toyota example was a purposeful and rational diversification that shareholders alone could not achieve in the financial markets. There is every indication that Philip Morris's and RJR Nabisco's structures could easily have been duplicated through financial market diversification had investors chosen to go that route.[3]

The remainder of this chapter will focus on the conditions under which horizontal integration (HI) and diversification make sense. Like our discussion of vertical integration in the previous chapter, HI will be justified only in circumstances where expansion into new products or markets utilises existing assets or competencies, expands the firm's unique asset base, or resolves a market failure problem. In the next section, we outline rational diversification in more detail. This discussion will apply not only to HI but to our prior coverage of VI.

A discussion of the role of the corporate centre follows. The chapter concludes with a critical summary of the managerial portfolio models that have been used traditionally to justify expansion into new products and markets along with a short coverage of the impact of related diversification on firm risk.

Related vs unrelated diversification

The question of whether or not horizontal integration makes sense boils down, first and foremost, to the issue of whether a firm's operations must be 'related' to achieve the returns from diversification. Regardless of what the answer to this question is we need to answer whether there is any payback from diversification. If the answer is that a firm's operations must be related we need to define what 'related' means.

The financial returns to diversification

Chapter 4 outlined results of a study by Rumelt that showed the returns to related diversification far outweigh the returns to unrelated diversification. More recent evidence paints an even more negative picture of the impact of unrelated diversification on firm performance. Comment and Jarrell[4] find that a firm's market value of equity rises during the period in which it chooses to become more focused (less diversified). Case 9.1 highlights this fact with respect to the Australian company Parbury. In a more comprehensive analysis of 1,449 US firms, Lang and Stulz[5] estimated the impact of the degree of a firm's unrelated diversification and its long-term performance. The results are shown in table 9.1 and indicate that the greater the degree of a firm's diversification, as measured by the number of different industry segments in which the company operates, the lower the premium afforded the firm, as measured by a ratio of market value to book value (of equity and debt).[6] The second line shows the discount in this ratio as associated with greater diversification within the same industry. In other words, having accounted for the main industry of operation, companies operating in five or more different segments have a market to book value ratio that is 50 per cent below a focused firm! Even operating in two unrelated sectors is sufficient to lead to a discounting of 35 per cent over the value of a focused firm.

In all this discussion, we have failed to define what we mean by related or unrelated diversification. Academic, economic and finance studies typically define relatedness based on industry definitions. Therefore, a company's degree of diversification would be greater the closer the industry definitions were and this would be based on standard industrial classifications.[7] However, management surveys show that the gains to merger or expansion come from the ability of the company to gain synergies in a host of areas, with the number one

Table 9.1: Diversification and firm performance

	Number of segments in which the firm is operating				
	1	2	3	4	5+
Market value: Book value	1.53	0.91	0.91	0.77	0.66
Discount relative to a focused firm	—	35%	43%	43%	49%

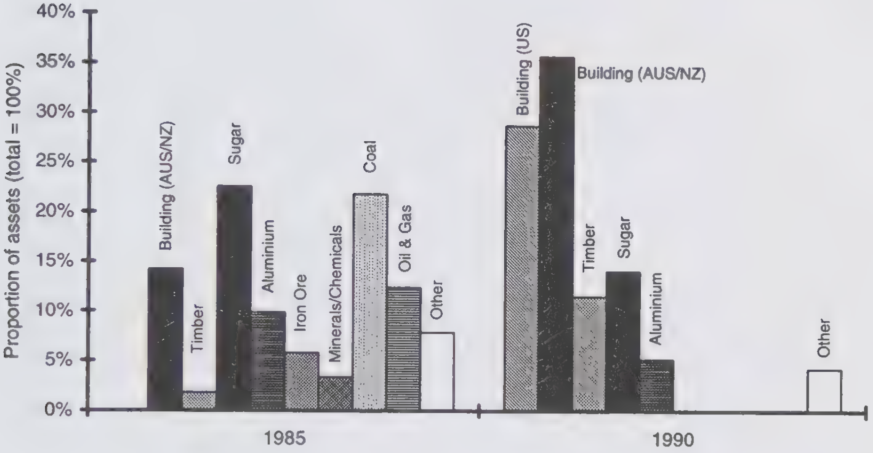
Source: L. Lang and R. Stulz, 'Tobin's q, corporate diversification, and firm performance', Cambridge MA: *National Bureau of Economics Working Paper* (unpublished), 1994.

source of synergy being in managerial skills.[8]

If something as nebulous as managerial skills is the main source of synergy between divisions of a company, how do we decide *ex ante* when a merger or expansion is related or not? For example, during the 1980s many managers and analysts thought that computer software and hardware were sufficiently synergistic that to be successful a company had to do both well. Only in hindsight do we know that this is not the case. A more recent example raises the same puzzling question. Is the purchase of Paramount Pictures by Viacom (a US cable operator) truly related diversification? Although Home Box Office (the number one pay television station in the United States) owns its own movie production operations, most of the major networks in the United States spent the 1970s and 1980s reducing their in-house production of movies and television programs. It was easier and cheaper for them to contract with independent producers. Which move is more rational?

The above examples point out the difficulty of deciding when products or operations are related. The same logic applies to markets. CSR went through a restructuring in the late 1980s that led to a greater focus on building materials but included the company's expansion into the United States (see figure 9.1). The supposition of CSR management was that the building materials markets in Australia / New Zealand and the United States were more similar than were the building materials and minerals markets in Australia / New Zealand. Is it not equally plausible that CSR's managerial skills gained through their Australian and New Zealand experiences in building materials and minerals had distinctive interrelations that we haven't been able to adequately quantify, while the American and Australian building materials markets require skills that are distinctly local?

Figure 9.1: Asset distribution at CSR (1985 and 1990)



Source: *CSR, Annual Reports.*

So what do we learn from all of this? First, how we define relatedness is quite vague but is ideally based on the degree of interrelationship between a company's different business unit operations, generally defined. Second, even with quite imprecise definitions, the empirical evidence indicates that 'sticking to one's knitting' is a more financially rewarding strategy. However, whether one chooses to knit jumpers or socks is less important than the fact that one knits!

CASE 9.1 Bringing focus and performance to Parbury

Parbury Limited was a classic Australian conglomerate. The company's troubles began with a corporate diversification strategy conceived in the 1950s, when it expanded into leather goods and fabrics, engineering, plastics, mining, metals and paints, not to mention foods. Parbury became the traditional revolving door conglomerate. Under-performing units were sold only to be replaced by other unrelated acquisitions.

By the late 1980s, the company was operating in a number of unrelated sectors using the cash from the profitable divisions to keep the unprofitable ones funded. Although the company was still turning a profit, there was no indication that any value was being created by the company that its shareholders could not have achieved more efficiently by simply holding the independent parts.

Asset acquisitions, disposals and write-offs at Parbury, 1988–93 (amounts in thousands)

Year	Acquisitions	Disposals	Write-offs
1988	$28,273	$24,044	$16,527
1989	$4,623	$190	$1,115
1990	$0	$3,942	$15,326
1991	$0	$8,244	$417
1992	$3,033	$4,008	$831
1993	$553	$0	$0

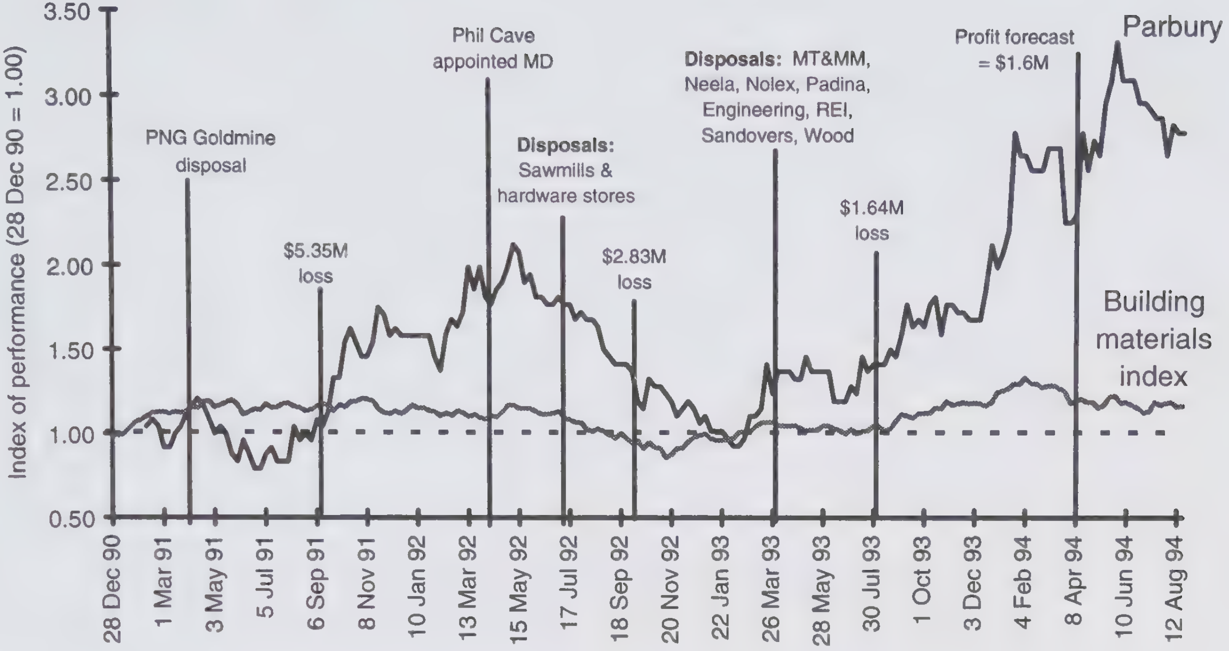
Phil Cave's Minstar Corporation purchased 8.5 per cent of Parbury in late 1990 and the company quickly adopted a plan to narrow its primary focus to the building materials and signage business. Minstar's control of Parbury was assured when Cave was appointed Managing Director in April of the following year. Conducting a massive sell-off and close-down, Cave and his management team disposed of the company's hardware stores (1992), its timber projects (1992), several of its sawmills (1991), its metal and plastic operations (1993), and its gold mine in Papua New Guinea (1991). In 1992, the company's acquisition of Ideal Standard's distribution business and Aakronite, Australia's leading producer of vanity cabinets, solidified Parbury's product range, allowing it to become a comprehensive supplier of finished bathroom, kitchen and laundry room products.

The table above gives an outline of Parbury's level of acquisitions, divestures and write-offs from 1988–93. It paints a picture of a company focused on removing unnecessary operations.

What were the implications of these changes? The figure on the next page shows the performance of Parbury Ltd equity as compared with the ASX building materials company index. Beginning in early 1993, along with Parbury's campaign to focus its operations and dump its unrelated businesses, there was a rapid response on the part of investors. In the period January 1993 through August 1994, Parbury achieved significant increases in value despite the fact that the company was showing operating losses and paying no dividend while selling businesses during a recession.

Source*:* This discussion is based on information contained in Parbury Ltd's *Annual Reports* plus G. Stickels, *Business Review Weekly*, 11 April 1994.

Parbury performance (1991–94)



Source: Based on information contained in Parbury Ltd's *Annual Reports* plus G. Stickels, *Business Review Weekly*, 11 April 1994.

What is related diversification?

We still need a definition of 'related'. For our purposes, related diversification is the application of the company's asset base to new products, operations or markets that:

- *increase the efficiency of the utilisation of the asset base.* This can occur either through the increased efficiency in the production and selling of existing products in existing markets and/or because the operations associated with new products and markets are more efficient than would be the case without the existing asset base.
- *increase the build up of new assets.* In other words, a company, having expanded its product lines or moved into new markets, has increased its asset base over and above what would have occurred if the activities remained separate.

How might this translate into the activities of the firm? Stated simply, the above two conditions ensure that the total from joint operations or diversification is greater than the sum of the independent parts. In the case of VI, we showed that integration up and down the value chain has value only when both joint production economies (JPEs) and trade in intermediate products (TIPs) demand it. With HI and diversification expansion of the same logic holds. The first question that needs to be asked is: do the activities add more value together than they would separately? Financially, we are asking if value additivity holds. Value additivity implies that the total net present value (NPV) of a set of projects is equal to the sum of the individual project NPVs.

Value additivity: $NPV(A + B + C) = NPV(A) + NPV(B) + NPV(C)$

Therefore, the first condition for rational diversification or HI is the existence of some joint value from the linkage of markets or products. We will call this super additivity (SA).

Super additivity: $NPV(A + B + C) > NPV(A) + NPV(B) + NPV(C)$

Note that joint production economies (JPEs) are simply a subset of the idea of SA. However, just as we found that JPEs were not sufficient to ensure that VI was necessary, there is no indication that SA implies that HI or diversification should occur. The second condition for rational diversification or HI is that the joint value cannot be contracted without internal control, that is, we have market failure. In other words, if we know that $NPV(A+B) = NPV(A) + NPV(B) + NPV(AB)$, then the question becomes: can firms A and B somehow write a contract that allows them to share NPV(AB) fairly and with stability? If the answer is yes, then some sort of joint marketing or production agreement is sufficient. If the answer is no, then some form of internal diversification or merger is necessary. Just as in the case of JPEs and VI, SA is a necessary condition for HI but market failure is both necessary and sufficient.

There are three areas where more efficient asset utilisation and development are important to the horizontal diversification of the firm: supply or production; customer demand; and business or managerial skills.

SA in production. From the supply perspective, we are talking once again about *joint production economies* and *economies of scope.* These arise from the ability to share overhead, production, distribution, marketing and other resources in a way that increases the gains to new and existing operations. There are fairly obvious examples of multi-market and multi-product JPEs. Ideally, the merger of Goodman Fielder with Uncle Toby's should have proven a classic example of distribution and marketing synergy. Unfortunately, the relatively well-run Uncle Toby's operation was subject to the bureaucratic and inefficient Goodman Fielder management structure. Another example is seen in Komatsu's expansion from an equipment manufacturer into the development and production of machine tools. This expansion arose from the joint proprietary know-how developed by Komatsu through the engineering of large-scale precision machines—its competitive advantage in its battle with Caterpillar.

SA in customer demand. From the demand perspective, synergies arise due to *customer rigidities* or *switching costs.* For example, Korean electronics manufacturers have focused on supplying products for the private label and OEM markets. In customer surveys, the product quality and satisfaction of the Korean manufacturers are normally perceived to be equal to those of the Japanese electronics companies, as long as the brand's identity is hidden. Once the product is revealed to be Korean, say a Goldstar product, evaluations drop. The implication is that long established intangible assets, such as brand names, can have dramatic effects.

In the United States, Sears, Roebuck & Company built a reputation based on its history as a mail order company that would sell customers in any location just about anything they wanted—it actually sold prefabricated houses at one time—and would completely guarantee quality and satisfaction, no mean feat in the late 1800s. Over the years this positioning was developed into an established reputation for quality assurance. Sears began leveraging this reputation by putting its name on a host of products, from tools and paints to white goods and clothing. Up until the 1970s, Sears' competitive advantage was this long established perception of guaranteed quality and its reward was the premium it

Table 9.2: Major products of American defence contractors

General Dynamics	Lockheed	Grumman	Northrop
Nuclear submarines	F-16/F-117A/F-22	Radar systems	B-2 bomber
M1 Tank	C-130	Computer system design	Electronic counter-measure systems
Armoured vehicles	Space shuttle processing	Aircraft components	Missiles
Launch systems	Missile systems	Special purpose vehicles	BAT anti-armour submunitions

could charge for its private label products. This advantage ultimately fell in the face of fierce competition from production-driven discounters—first K Mart and then Wal Mart and the warehouse discounters—who found that such quality guarantees could be mimicked, especially in a world where product quality had become less variable and quality guarantees came directly from the manufacturer.

SA in managerial skills. The number one area of synergistic gains is in the realm of managerial skills. Unfortunately, unlike the two prior areas of product and market interrelationship, this is the most difficult to codify. The benefit of managerial skills as a source of SA is that, like other intangibles, their value is generally jointly produced and utilised and, therefore, a source of fundamental strategic advantage.

A nice example of synergies arising out of the development of specific but unidentifiable skills is seen in the major American defence companies. The major product groups of four of these companies is shown in table 9.2. It should be clear that many of these product groups are separable from one another; that is, there are no apparent JPEs that imply they should be together. This fact is supported by General Dynamics' recent sale of its missile operations (to Hughes Aircraft), its electronics business (to the Carlyle Group), and its tactical military aircraft group (to Lockheed). Defence contractors' reaction to the American military build-down has not been a wholesale move to commercial applications, but rather a refocusing of the companies around the critical skills associated with meeting specific defence needs.

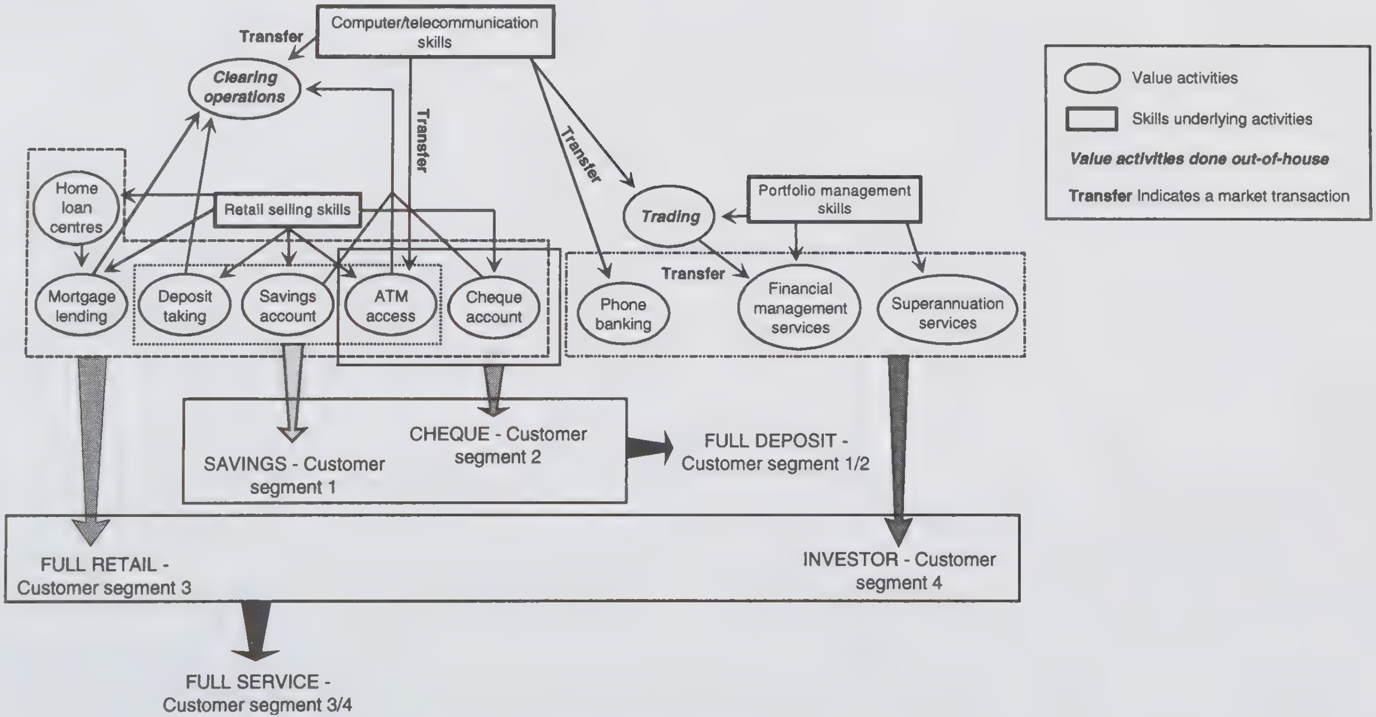
Two factors are driving this restructuring. First, the skills necessary for the development of high technology weapons systems reside in the know-how possessed by the companies through their historic development, the human capital of their engineers and managers, and patents and designs they have developed. Given that a minimum level of scale is necessary to be successful in the defence industry in the long term, it pays to focus when demand declines. Second, and more important, there are unique skills required when dealing with the Pentagon procurement system. New weapons systems are not developed independent of existing weapons, nor is one system under development independent of the other systems under development. This requires the companies to have built up tangible and intangible assets associated with working the Pentagon system. More interestingly, linkages with other defence contractors become critical as well, given that the know-how necessary for the development of a modern weapons system is unlikely to reside in one company. What makes defence contractors unique and unlikely to successfully integrate their operations into more commercial endeavours is that their key competency is the ability to work within the procurement system of their key customers.

Accounting for market failure in HI and diversification

Given that SA alone is not sufficient to justify HI and diversification, we need to concentrate on the factors that lead to internal HI dominating external contracting. To do so, it is best to go back to the value chain and extend it to account for more complex organisational structures. The best method for doing so is to build on the idea of a *value constellation* as described by Norman and Ramirez.[9] We can describe a value constellation as a set of independent and related value activities. According to Norman and Ramirez, the modern corporation is not the linear value creator envisioned by Michael Porter[10] but a more complex, non-linear, value creator where different customers formulate their own 'products' by picking and choosing the combinations of value activities that most satisfy their needs.

The example in figure 9.2 outlines a stylised non-linear value chain for a bank and will serve as the basis of our discussion of when HI and diversification are necessary.[11] Three characteristics of this system are important to understand. First, there are *fundamental skills* which represent the basis of the value activities. These skills encompass the tangible and intangible assets and know-how that represent the core of what defines the firm. In our simple example, three clusters of skills are important: computer/telecommunications skills, retail selling skills, and portfolio management skills. These clusters of skills represent non-tradable or imperfectly contractible components of the firm (otherwise we would have broken them down further). However, trading may be possible across the skill clusters. Second, there are *value activities* that arise from the application of these skills. For example, computer and telecommunication skills are necessary for clearing operations, ATMs, trading activities and phone

Figure 9.2: A hypothetical value constellation of a bank


Computer/telecommunication skills
Transfer
Clearing operations
Transfer
Transfer
Home loan centres
Retail selling skills
Trading
Portfolio management skills
Transfer
Mortgage lending
Deposit taking
Savings account
ATM access
Cheque account
Phone banking
Financial management services
Superannuation services
SAVINGS - Customer segment 1
CHEQUE - Customer segment 2
FULL DEPOSIT - Customer segment 1/2
FULL RETAIL - Customer segment 3
INVESTOR - Customer segment 4
FULL SERVICE - Customer segment 3/4
Value activities
Skills underlying activities
Value activities done out-of-house
Transfer Indicates a market transaction

banking systems. Finally, there are the *linkages* between the skills and activities and between the activities themselves. The critical question that will need to be addressed is: are these linkages best facilitated by market mechanisms or the firm's internal organisation structure?

The bank system provides a host of value activities from which different customer segments select. CHEQUE customers require only ATM and cheque account access while FULL RETAIL customers demand cheque and savings accounts, deposit taking, ATM access and mortgage financing. INVESTORS require financial management and superannuation activities and access to phone banking. What is important from the firm's perspective is not so much what the customers demand but which skills and assets are necessary to deliver the value activities. In the case of customer segments 1, 2, 3 and 3/4, the relevant skills are retail selling and computer/telecommunications. The question for the bank is whether it needs to provide all the value activities associated with serving these segments or whether it could contract out some of them. For these customer segments, it is extremely unlikely that the different activities could be provided by completely different firms. First, it is probably economically inefficient to break up the retail selling skills since there are likely to be strong JPEs between the different value activities. Second, it is unlikely that the bank would even know which of the retail selling skills are critical to which type of activity (they may all be necessary for all of the activities). The SA is so heavily intertwined in the underlying assets that having different firms do the different activities for these customer segments would be difficult if not impossible. For example, how would the bank know where to attribute success and failure when customers are buying bundles of services for which the selling activities cannot be separated?

However, once we step across skill boundaries the likelihood of outsourcing increases. It is quite likely that the skills associated with retail selling are sufficiently different from those associated with computers/telecommunication that unbundling the two skill groups and the value activities on which they are dependent makes sense. There is no fundamental logic to argue that the ATMs and clearing operations could not be operated separately. Going further, it is possible that the portfolio management skills are also sufficiently independent that the activities derived from them would be contracted out.

Using the above logic, we are left with five firms supplying different bundles of services. The *core bank* provides cheques, mortgages, savings and deposit taking. The *investment house* provides superannuation and financial management activities. The *clearing house* does clearing services for the core bank while the *trading house* handles the financial market transactions of the investment house. Finally, the *computer services* company services all of the prior companies. It handles ATM and phone bank services along with miscellaneous services surrounding trading and clearing activities.

But what of the customers? Would they not be confused by all this? If the customers truly value one-stop banking, then there is no reason to believe that they need to know that the main services provided to them are provided by someone other than their bank. In the United States, almost all the ATMs are operated by Ross Perot's company EDS. The fact that Bank of America does not operate its own ATM system is unknown to most customers. Also, most smaller banks do none of their own clearing operations, leaving this to larger banks with sufficient economies of scale to justify doing it in-house. There is also no indication that the bank even needs to be a source of funds. With large-scale securitisation of things like mortgages, auto loans and credit cards, the bank becomes less of a financier and more of an originator and servicer. The bank builds on its skills associated with access to the customer, leaving the actual funding to large investment banks who can achieve the minimum scale necessary to fund the smaller banks' activities at a better cost of funds and lower risk.

So where does this leave us? The HI and diversification story is similar to the VI story. Integration is necessary when the assets and skills required to deliver the value customers demand cannot be handled through market transactions either because such transactions are inefficient, due to the inability to write a contract, or uneconomic due to large SA. It is this logic that is the driving force behind the outsourcing revolution sweeping business today. It also forces management to confront a very fundamental issue: what is the role of the corporate headquarters?

What is the role of the corporate centre?

At the heart of the rationally diversified firm is the role played by the corporate centre. The corporate centre works as a central coordination, leadership and policing mechanism for the rest of the corporation. Like all structures we must ask, is this necessary? Today many companies are downsizing and reducing their corporate headquarters staff significantly. If we examine the evidence in Europe, we find that most companies have responded to the Single European Market initiative not by removing authority from their country operations but rather by reducing the need for European headquarters staff. This seeming contradiction is supported by the fact that rationalisation of production and marketing has increased the demand for coordination between country operations that were previously independent. The result has been that the coordination function has drifted away from the headquarters and to the more critical local operations since these are perceived to be closer to the market.[12]

So what is the role of the corporate centre? At its very heart, the corporate centre is an information node in the corporate network. Corporate headquarters do not produce any product and, therefore, cannot be seen as creating tangible value for customers. However, by efficiently facilitating the transfer of information, the corporate centre serves as a substantive intangible value creator for the customer. This information function can show up in a number of ways, all of which follow from the simple oft-repeated dictum:

Centralise strategy, decentralise operations.

Strategic mission—the HQ as leader

At one level, the corporate headquarters provides the leadership and guiding mission of the corporation, ensuring that goals are clear and criteria for performance are spelled out in a way that ensures transparency. The leadership function of the headquarters serves to ensure, not that functions are performed, but that functions are used to steer the ship in the appropriate direction. The CEO or Managing Director serves as a personification of the direction of the company. As an example of this, consider a comparison between the mission statements of Pacific Dunlop and Advance Bank.

Pacific Dunlop's mission as revealed by its *1992 Annual Report* is given below:

> Today our businesses are market leaders in fields as diverse as clothing, footwear, food, medical and health care products, automotive, building, communication and industrial products . . . And, despite their diversity, all share one common attribute—they add to the quality of our life . . . Brands are fundamental to our business and they will provide the springboard to further growth . . . [13]

This statement reveals little except that the company does not have a core proposition that links its disparate operations. Compare Pacific Dunlop's mission to the statement by Advance Bank from its *1994 Annual Report*:

> The Bank is committed to developing long-term relationships with its customers, supported by the highest level of service. Our staff are supported by state-of-the-art technology and are dedicated to the efficient delivery of modern banking services to our customers . . . [The Bank's aims are to] increase residential lending . . . develop products and services for business customers . . . to continue our expansion interstate . . . [and] extend our range of electronic banking services . . . [14]

The statement is clear and to the point, non-grandiose, and provides guidance for the different bank operations.

Performance criteria—the HQ as controller

Conditional on the mission of the corporation, the corporate centre is responsible for ensuring that the value of the whole is maximised. As we noted earlier, the rationally diversified firm exists in a world where investment, production and marketing activities have spillovers onto the other operations. Without a multi-dimensional criteria for measuring performance, the whole system will be sub-optimised. The role of the corporate centre as controller arises because, since the corporate headquarters can (ideally) react more quickly to changing circumstances, it is better able to continuously discipline the various parts of the enterprise than would be possible from external financial markets or institutions. To use an analogy, financial markets and institutions serve more like periodic doctor's check-ups, while the financial discipline imposed internally is like a constant heart monitor.

Too much can be made of the part that HQ management play in controlling conglomerate operations. This has been brought home recently to General Electric (GE) and their troubles at Kidder Peabody. GE Capital grew out from the financing arm of the old General Electric Company, a purveyor of turbines, engines and electrical products. Seeing gold in the finance business, GE moved more and more into pure financial activities without a real feel for the nature of the business. There is little doubt that a lack of an understanding of the business it was pursuing is a major determinant of the company's recent troubles. As noted in Case 9.2, Kidder Peabody never really fit into GE. Jack Welch learned the hard way that to be a controller one must understand every facet of the business being controlled.

Case 9.2 GE's nightmare on Wall Street

General Electric's nightmare on Wall Street began when the electrical goods and engine manufacturer decided it should diversify into the financial sector. GE already had some presence in the finance industry through GE Capital Services Inc. GE Capital was a large financing company involved in car leasing, mortgage insurance and equipment financing and was very profitable.

In 1986, GE sought to substantially increase this presence with the acquisition of the securities firm Kidder, Peabody and Co by GE Capital. The aim was to build synergy with GE Capital to produce a 'force in the world's financial marketplaces second to none'.

Unfortunately, GE failed to realise that there is a vast difference between the worlds of finance in which GE Capital and Kidder operate. Whereas GE Capital was focused on Main Street, Kidder's world was Wall Street. No one at GE really understood the industry in which Kidder was operating. This was exemplified by CEO Michael Carpenter, who had no securities industry experience and who had joined GE from a career in management consulting. Carpenter and other senior

Kidder executives did not even obtain the necessary securities dealer's licences from the Securities and Exchange Commission that were arguably required of them by law to operate in the industry.

Carpenter embarked on a risky strategy to gain a dominant position in the fixed-income market, especially mortgage-backed securities. To that end, he allowed Kidder's bond inventory to grow dramatically to grab a larger number of underwritings. He thought that Kidder could hedge part of the inventory and that, in the hands of his best traders, the inventory could become a source of enormous trading profits. Such risk taking was encouraged by the implied financial backing of GE, creating a moral hazard problem. When interest rates rose in 1994, Kidder was left exposed and vulnerable. Kidder's profits were very volatile, but the firm increasingly ran up big losses.

Carpenter never got along with GE Capital head Gary Wendt, an engineer turned finance expert. He reported to Jack Welch, head of GE, not to Wendt who ran the company of which Kidder was notionally a part. Kidder's top personnel were far removed from the GE Capital mould and never really fitted into the company. The animosity between Carpenter and Wendt undermined much of the potential synergies between the two operations. Clients who wanted GE Capital to put up money for a deal would avoid using Kidder as their investment banker. Kidder, despite being a powerful player in mortgage securities, didn't even make it into the ranks of the top three underwriters of the mortgage securities that GE Capital had issued in 1994. The opportunities for synergy fell away as Kidder evolved into more of a trading house, a business that has very little to do with the operations of GE Capital.

GE erred in thinking that management success in one business would automatically transfer to another. It thought that controlling the people who make up Wall Street's freewheeling trading culture was as simple as controlling manufacturing processes such as those in which GE had long specialised. Most firms on Wall Street, however, lack the kind of tight management structure that is characteristic of companies such as GE. Kidder was no exception. It was poorly run and a lacklustre producer of profits.

It was this environment that allowed Kidder trader Joseph Jett to notch up huge amounts of fictitious trading profits in government securities and that forced GE to report a $US350 million pre-tax loss in early 1994. The scandal was a fiasco, not only from the point of view of Kidder. It was a damning indictment of the management of GE, previously upheld as the model of a well-run organisation.

GE commissioned a report by the former head of enforcement at the Securities and Exchange Commission, which concluded that Kidder suffered from 'lax oversight' and 'poor judgement'. Virtually all of the Kidder executives, including CEO Michael Carpenter, were forced out and replaced by GE executives. Despite having a much-vaunted and much-studied management system, the Kidder fiasco demonstrated that GE was just as capable as any other major company of making major errors of judgement when operating in an industry that it did not fundamentally understand.

Sources: T. Smart, 'Wall Street's bitter lessons for GE', *Business Week*, 22 August 1994; T. Paré, 'Jack Welch's nightmare on Wall Street', *Fortune*, 5 September 1994.

Management of cash flows—the HQ as banker

As noted in chapter 4, much of the activity of the corporate centre is the management of cash flows; that is, the headquarters serves as corporate banker. At this level, there are two roles played by the headquarters. First, the internal corporate financial market may be cheaper for many smaller types of financial transactions. For example, it may be more efficient for a corporation to finance activities internally because it reduces the expense of having to continuously go to the capital markets for new projects. Second, the internal corporate financial market may be more efficient than external capital markets. This would arise because of the moral hazard problems that normally exist with arm's-length financial instruments, such as bonds, equity or bank loans. With internal monitoring associated with internal financing, the corporation is better able to control its different operations (this is the HQ as controller) while not having to release information into the marketplace.

Our discussion in chapter 4 pointed out that caution must be exercised when using the HQ-as-bank as a rationale for a firm's diversification strategy. Efficient financial markets, whether they be formally organised or not, are quite powerful at providing financing as well as policing management. Hence, the tendency to find more unrelated operations under one holding company in countries with relatively inefficient or overly regulated financial markets. For example, in the United States, the massive venture capital market represents a formal though unorganised mechanism for funnelling capital to small companies. In more regulated countries, like Australia and those of the European Union, this channel is unavailable to most small firms, forcing them to rely on banks and government programs or to link themselves with larger holding companies. In addition, the relative profitability of companies like Email and Pacific Dunlop is not *prima facie* evidence that diversification pays but may be a reflection of the nature of the Australian governance structure and shareholding laws.[15] Finally, even if there was a financial markets efficiency justification for the role of the corporate HQ, there is no reason to believe that such a role requires that the businesses financed internally be unrelated.

Management of interrelationships—the HQ as co-ordinator

Since the firm gets its distinctive value from joint asset utilisation it should be clear that this imposes on management the need to coordinate the joint utilisation of assets directly. For example, if a bank allowed branches to operate completely independently, it would find that much of each branch's activity would be directed against other branches of its own company. In the United States, General Motors found that its Oldsmobile and Chevrolet divisions were more direct competitors than they were competitors of the Japanese motor car manufacturers. When Oldsmobile began a campaign of rebates to reduce its burgeoning inventory most of the sales came from GM's Chevrolet division.

Management of intangibles—the HQ as protector

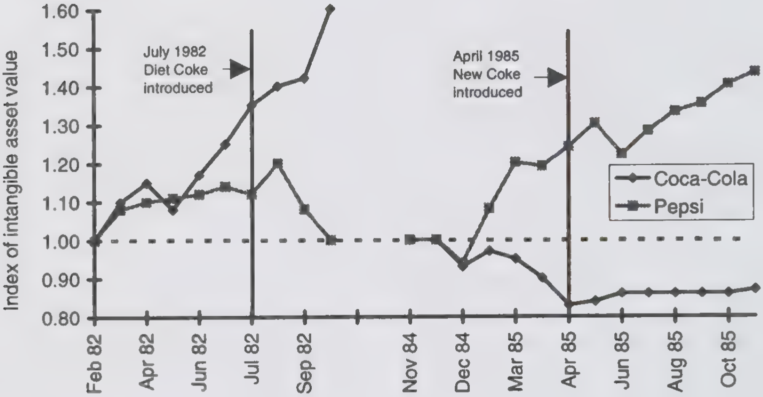
A majority of the value of the firm is in its intangible assets and, as events like Marlboro Friday have shown, it is the most nebulous and sensitive area of a firm's value. As such, the firm's intangible assets must be managed from the centre to ensure that such assets are not needlessly depreciated and that sufficient ownership exists so that there is an incentive to build them further. Intangible assets show up in two primary areas: brand names and other demand-based intangible assets and know-how or other managerial or production-based intangible assets. Since we gave considerable emphasis to the latter types of assets in chapter 8, let us concentrate on a short discussion of the role of demand-based intangible assets.

Coca-Cola Corporation and Pepsico are two examples of companies with enormous investments in amorphous assets, their brand names Coke and Pepsi. Simon and Sullivan[16] estimated that the value of the Coke brand name was 55 per cent of the total value of Coca-Cola Corporation while the comparable figure for Pepsi was around 37 per cent of the market value of Pepsico.

Coca-Cola found out exactly how sensitive its intangible brand assets were when it made its dramatic formula change in 1985. The New Coke debacle was driven by the fact that Coke was losing market share to Pepsi in the critical under-30-year-old age group. Blind taste tests confirmed that Pepsi's formulation was preferred to Coke's. However, Coca-Cola management failed to realise that the Coke name created sufficient customer rigidity to ensure that, when the taste tests were not blind, Coke was the preferred product. Figure 9.3 (the right hand side) shows what happened to the value of the Coke and Pepsi brand names when Coca-Cola brought out its new formulation. From January 1985, when news leaked of the possible change in product formulation, through to July 1985, when the original formulation was re-introduced, Coca-Cola lost approximately 14 per cent of the value of the Coke brand name (or approximately 4.5 per cent of the total company's value). Interestingly, during the same period, the value of the Pepsi brand name soared by more than 40 per cent (a 15 per cent increase in the value of Pepsico).

Although quite sensitive to bad news, the public goods nature of intangible assets creates interesting opportunities for strategists. The Coke name has real tangible value (although for intangible reasons). This is seen by the increase in the value of the Coke brand name when Diet Coke was introduced in 1982 (the left hand side of figure 9.3). For years, Coca-Cola's main diet soft drink was Tab, a saccharin-based cola. With the introduction of aspartame in 1983, Coca-Cola

Figure 9.3: A comparison of the relative intangible assets values of Pepsi and Coca-Cola

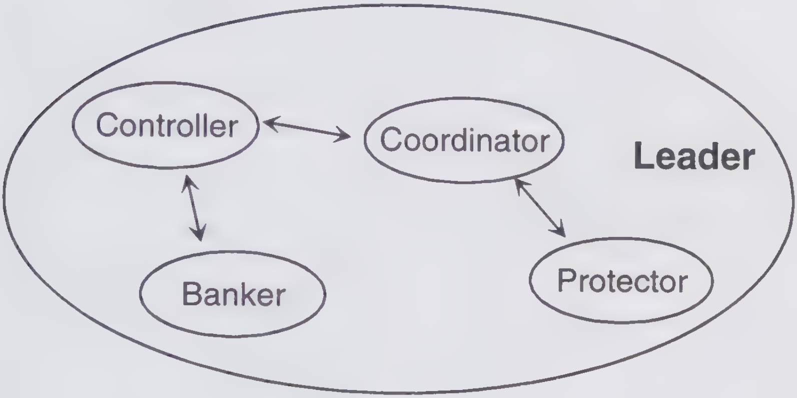


Source: C. Simon and M. Sullivan, 'The measurements and determinants of brand equity: a financial approach', *Marketing Science*, 12, Winter 1993, 28–52.

executives decided that the quality of a new diet formulation warranted the use of the Coke brand name. Previously, Coca-Cola executives refused to allow Tab to use the Diet Coke moniker because it was felt that Tab was an inferior product that would depreciate the Coke name. The introduction of Diet Coke had no real impact on the value of the Pepsi brand name but was responsible for increasing the value of the Coke brand name by more than 50 per cent in less than a year.

These examples indicate the double-edged nature of the management of intangible assets. By definition these assets are transferable but are generally quite sensitive to good and bad news. In the case of production or managerial intangibles this is due to the fact that their value is linked with workers' and managers' human capital. In the case of demand-based intangibles this is primarily because their value resides in their ability to affect customer behaviour, a poorly forecastable and quite unstable commodity. Because of these facts, intangible assets are slow to develop, subject to expropriation and quick destruction, either within the firm or by competitors, and lack natural incentives for future development. Only through tight ownership of the asset by the core of the corporation is the viability of these assets sustainable.

Figure 9.4: The role of the corporate centre



Summary

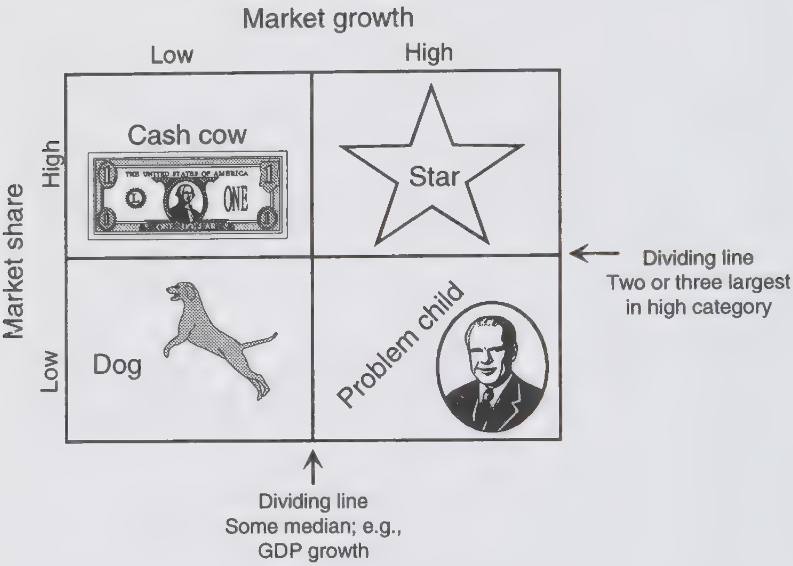
In the rationally diversified firm the corporate centre adds value through its monitoring and protecting, coordination and guidance roles. However, these roles are not independent. The schematic in figure 9.4 attempts to capture some of the flavour of the interaction between the key components of the HQ's value-creating activities.

The role of the HQ as controller is tightly linked with its personification as banker and coordinator since the same fundamental factors are in play, the job of the corporation as a manager of joint assets. The centre's roles of coordinator and protector are also tightly linked for the same reason, plus the added incentive that intangible assets require not only coordination but protection from depreciation. Finally, the overarching purpose of the HQ is to provide guidance. This characteristic should pervade all the facets of the centre's operations.

The product/market portfolio

Over the years, a number of approaches have been developed with the aim of simplifying the product/market investment decision. Financial NPV models were found by many to be too complex or too narrow to address general strategic questions, as opposed to decisions like the choice of which specific project to adopt. Product/market portfolio approaches exist primarily as simplifying tools and need to be recognised as not providing the end solution to product and

Figure 9.5: The BCG growth share matrix


Market growth
Low
High
Market share
High
Low
Cash cow
THE UNITED STATES OF AMERICA
ONE
Star
Dog
Problem child
Dividing line
Two or three largest
in high category
Dividing line
Some median; e.g.,
GDP growth

market investment decisions. We will summarise three of these models and provide a fourth model that is more logically rigorous.

The growth share matrix

The growth share matrix (GSM) approach was developed by BCG as a means of determining cash flow allocations across products and, to a degree, markets. The simplest form of the GSM is shown in figure 9.5. This approach looks at the relevant dimensions of corporate effort allocation as the level of market growth and the relative strength of the company's products. Market growth could include sales growth of a product category (if all the products on the matrix were in the same product category), GDP growth of an economy (if the relevant comparison was between markets), or some relative growth measure (if the products were from different categories and markets). Market share would be measured as either raw market share or some relative measure against a base competitor.

The GSM breaks the world into four alternatives, cash cows, stars, dogs and problem children. Cash cows are products in mature or declining markets with net positive cash flows. Dogs are products in mature or declining markets with low or negative net cash flows. Stars are products in developing markets where

Table 9.3: Performance difference across the GSM categories

	Cash cow	Star	Problem child	Dog
Return on investment	30.00%	29.58%	20.55%	18.48%
Advertising/ Sales	0.71	0.85	1.02	0.81
R&D/Sales	1.68	2.76	2.63	1.76
Cash flow from investment	10.01%	0.74%	-2.67%	3.41%
Market share growth	0.38	0.72	0.39	0.14

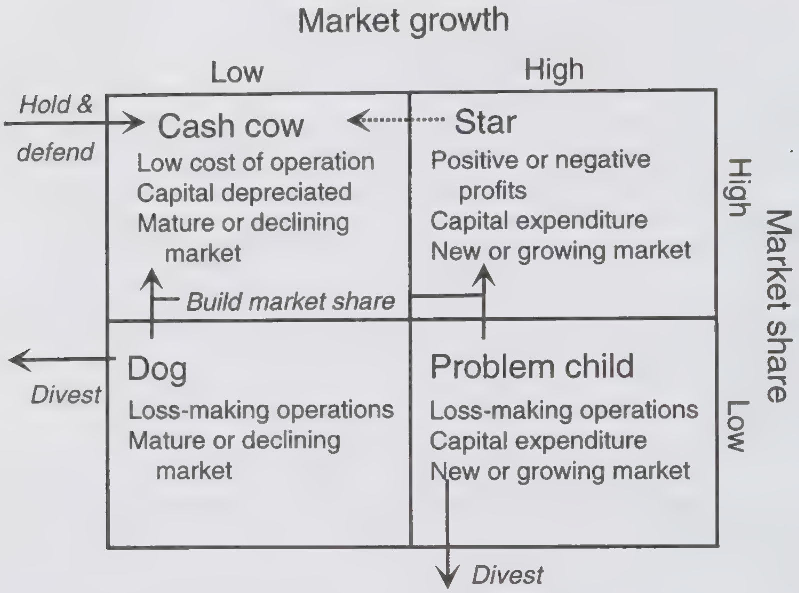
Source: D. Hambrick, I. MacMillan and D. Day, 'Strategic attributes and performance in the BCG matrix: a PIMS-based analysis of industrial product business', *Academy of Management Journal*, 25, September 1982, 510–31.

the company's position is strong. Problem children are products in developing markets where the company has a weak position. The net cash flows of stars and problem children could be positive or negative. Table 9.3 outlines some of the empirical regularities found regarding these classifications.

The options are fairly clear (see figure 9.6). Dogs require one of two decisions to be made, divest the operation or invest to build market share. Problem children will, over time, become dogs without investment to build market share. If investment is not viable, the problem child should be divested. Over time, stars will develop into either cash cows or dogs and corporate effort needs to be directed towards making the latter possibility remote. The original premise of the GSM was grounded in the belief in an experience curve effect. If cost declined with experience, market share translated into lower costs. *Ergo*, stars could be built into cash cows as long as a leadership position could be maintained. The alternative is that entry and competition will erode market share and move the product more into the realm of a strong dog or a weak cash cow. In the GSM approach, the position of the cash cow is sacred and corporate effort is to be directed at maintaining the cash flow and protecting the position.

The general prescription following from this approach is that the company needs a balanced portfolio of opportunities and sources of funds. Dogs are to be

Figure 9.6: **Performance and strategy implications of the BCG growth share matrix**


Market growth
Low
High
Hold & defend
Cash cow
Low cost of operation
Capital depreciated
Mature or declining market
Build market share
Star
Positive or negative profits
Capital expenditure
New or growing market
High
Market share
Low
Divest
Dog
Loss-making operations
Mature or declining market
Problem child
Loss-making operations
Capital expenditure
New or growing market
Divest

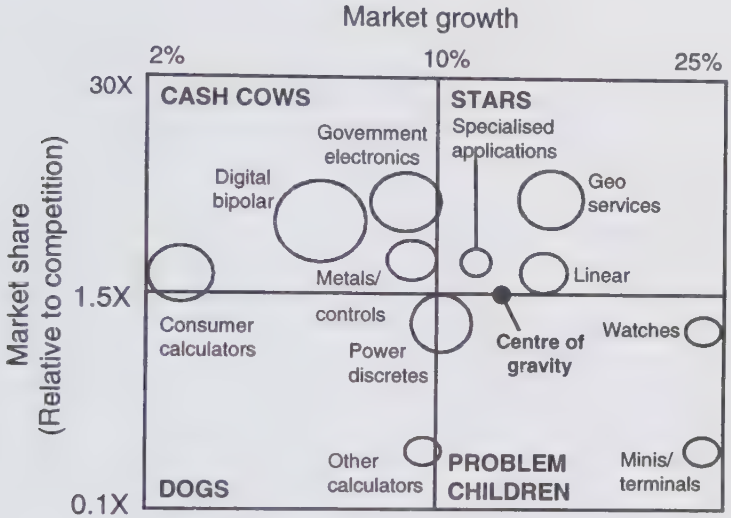
avoided and problem children either invested in or removed. Cash cows are to be protected so as to fund investments elsewhere in the corporation. Stars are to be nurtured. Case 9.3 gives an example by applying the GSM to Texas Instruments.

CASE 9.3 The GSM and Texas Instruments

Texas Instruments (TI) is based in the fast growing electronics industry. The figure on the next page portrays TI's portfolio some years ago. There are a number of striking aspects of TI's product mix. The centre of gravity of the portfolio, that is, the weighted average of the various businesses, is a relative market share of 1.5 times its competition. The firm is the market leader in most of its businesses and, in many, it has a very strong position. The overall growth rate of the portfolio, at 12 per cent, is also high. That is, of course, not surprising given the nature of the businesses in which the firm operates.

It is very interesting to note that there are no real dogs in the TI stable. The closest thing to a real dog is the relatively small investment in 'Other calculators'. In that case, the firm has about a 30 per cent relative market share in a market growing at 10 per cent. Although a growth rate of that level still allows some

A BCG growth share matrix for Texas Instruments



Notes: X indicates relative market share
The size of the circle indicates importance (assets)

opportunity for realignment of market share, we might suspect that the prospects are not auspicious for a firm with only 30 per cent of the market share of its main competitors. Beyond that case, the firm has either been extremely lucky or very ruthless in avoiding dogs. We might suspect that it has disposed of anything that it could not build into a star and eventual cash cow.

The history of TI is that relatively few products have ever entered the portfolio as stars. The firm has not been the innovator in the semiconductor business in the post-war period. Most of the innovation has come from Fairchild, Intel, Mostek and others, but not TI. However, TI has made its reputation by coming in after the pioneer and then being very forceful in its assault on the market.

Texas Instruments has had a consistent corporate philosophy, '[we] would like to dominate [any business we enter], and we have a view that dominance in these technologies requires adding capacity at an extraordinary rate to meet market demand, and pricing aggressively well ahead of the experience curve'. It has not always won and has had a couple of spectacular losses (the most awe-inspiring being in personal computers). But, by and large, it has managed to persuade most of its competitors that when it latches onto what will become a large-scale commodity product, the only way to compete with TI is on a high-volume, low-price basis, or else you will be driven into a segment in the corner. So the previous figure represents the portfolio of the late entrant price cutter, using its cash base to fund new entries. It is a very strong portfolio with almost no dividend. That naturally increases the cash TI has available to fund its new entry strategy.

The competitive strength matrix

The second of the popular matrix approaches is the competitive strength matrix (CSM) popularised by Shell, General Electric and McKinsey. This approach is very much a 'fit' methodology—develop products or markets where you are strong and where growth opportunities are good. A rudimentary CSM is shown in figure 9.7. The dimensions are industry attractiveness, a more general concept than simple market growth, and competitive strength, an expansion of the concept of market share.

The CSM imposes five decisions on the firm. The most obvious decisions are to 'invest' in areas where markets are attractive and the company's strengths are utilised and to divest oneself of operations where strength and attractiveness are low. The other decisions are of varying degrees of fuzziness. 'Harvesting' entails taking advantage of the company's strengths or the growth of the market to make money while the getting is good. The company is effectively exiting but in not as quick a manner as would occur with pure divestiture. In the 'selective growth' scenario, investment occurs; however, the company reserves the right to wind down operations. The 'up or out' option essentially means that the company should harvest or selectively invest.

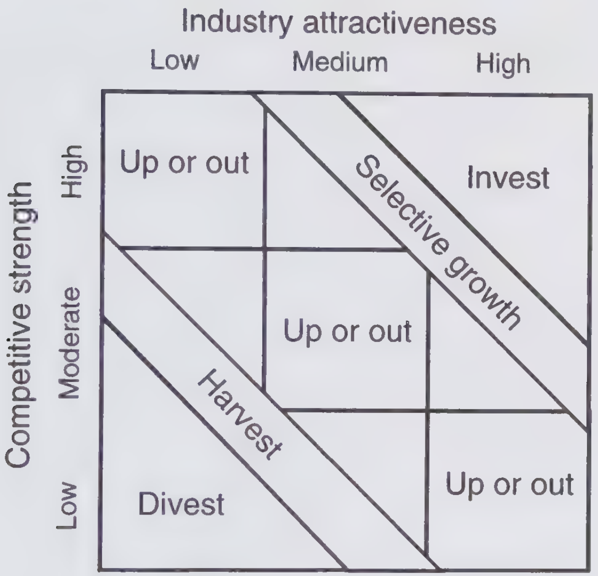
The life cycle matrix

The third approach to market and product investment was developed by Arthur D. Little and posits investment strategy based on life cycle location and competitive strength (see figure 9.8). Competitive strength is defined as in the CSM while the operative measure of the attractiveness of the industry is the life cycle stage of the product category. The implication that follows from using the life cycle matrix (LCM) approach is that companies need to generationally diversify their portfolio of products. However, caution is expressed about engaging in such diversification without linking it to the fundamental strengths of the company.

Dissecting the matrix approaches

Although each of the matrix approaches was argued to be a unique addition to management thinking, there is little real difference between the three models. Figure 9.9 superimposes the three matrix approaches on one graph and points out the similarities. Effectively, all the approaches break the world into two dimensions. The first dimension is some measure of company or product strength, as measured subjectively (CSM & LCM) or more objectively (GSM). The other dimension is the attractiveness of the market, again either measured

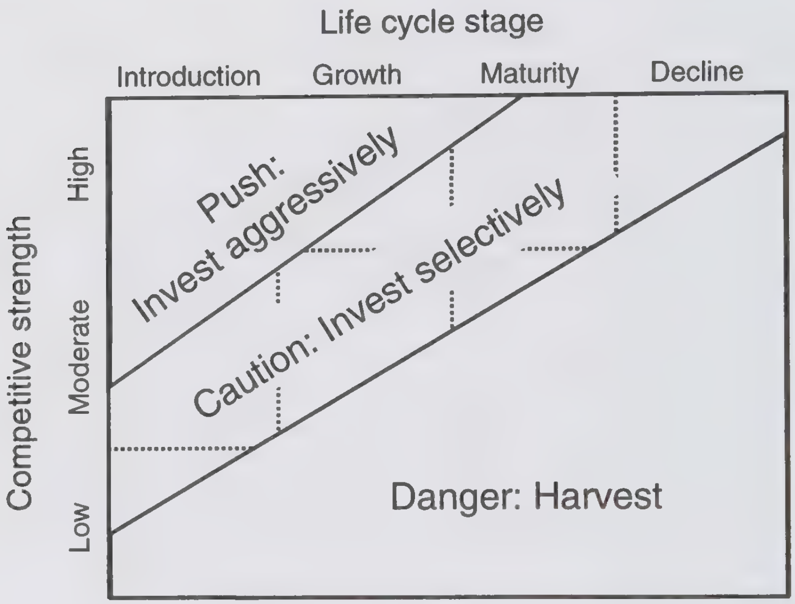
Figure 9.7: **The strategic implications of the competitive strength matrix**



objectively and narrowly (GSM) or more subjectively and broadly (CSM & LCM). Each approach tends to tell a different story about what is the appropriate role of the product/market portfolio. The GSM tells managers that the product/market portfolio should be balanced around sources and uses of cash. The CSM highlights the importance of fitting the market with the company's sources of strength. The LCM talks about the importance of having a constant balance of products/markets so that younger products/markets are in a position to take over from declining products/markets.

What are we to make of these approaches? Are they useful or gross oversimplifications of complex problems facing managers? The beauty of these approaches is their simplicity and the fact that they force managers to confront complex problems by simplifying them and thinking about them on comparable dimensions. By doing so, they take what might appear to be unresolvable problems and boil them down to something manageable. However, in doing so they substitute one type of error for another. By not simplifying a problem, managers make errors driven by their inability to see the forest for the trees. That is, they view problems as intrinsically unique when they are nothing of the sort. By using the matrix approaches, managers err in the opposite direction—they force problems into inappropriate and naively simplistic boxes.

Figure 9.8: The strategic implications of the life cycle matrix

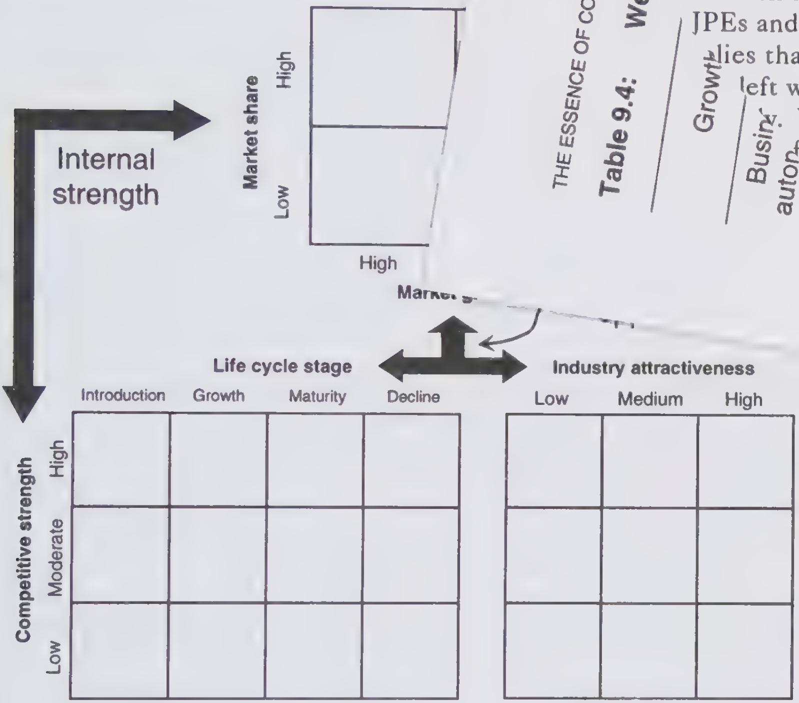


There are a host of shortcomings associated with these approaches and table 9.4 outlines the most typical weaknesses discussed in the literature of the two most popular models, the growth share matrix and the competitive strength matrix.[17] From the perspective of the discussion here, there are two fundamental issues that need to be addressed without which an understanding of the shortcomings of these approaches cannot be gleaned, the issue of risk and the measurement of the dimensions of internal and external strength.

First and foremost is the fact that these models say little if nothing about risk. Where there is a discussion of risk, risk is defined either as the likelihood of making a mistake, for example, investing in a dog, or the variance of some accounting return measure, such as ROA or ROE. To have a model of investment that says nothing about risk from a financial perspective is a serious shortcoming and one we will address in the next section.

The second area where these models come up short is in their definition of market attractiveness and company strength. There is no reason to suspect that one can easily come up with a uni-dimensional measure of either concept. For example, Coca-Cola's competitive strength is its brand image. This is also its competitive weakness since it cannot risk doing anything to damage an asset that accounts for 55 per cent of its value. Also, how is it possible to have one measure

Figure 9.9: A comparison of matrix a


Internal strength
Market share
High
Low
High
Mark
Life cycle stage
Introduction
Growth
Maturity
Decline
Industry attractiveness
Low
Medium
High
Competitive strength
High
Moderate
Low

of attractiveness, short of some financial measure like profitability? Consider the market for cataract remedies. Two dimensions are important: ability to pay for a remedy and the likelihood of getting cataracts. The first is measurable by income. The second is also determined almost exclusively by income. However, they are almost perfectly negatively correlated! What, then, defines an attractive market for cataract remedies?

Matrix approaches are useful when their limitations are recognised and they are applied as tools used in conjunction with other techniques for making complex decisions and not as stand-alone guidelines for product and market investments.

Understanding risk and diversification

We previously spoke about how the traditional matrix approaches ignore the sources of synergy associated with business activities along with the concomitant financial risks.[18] The approach that we will discuss now provides a simple

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THE ESSENCE OF CORPORAT

Table 9.4: Wea

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Figure 9.8: **The knesses of portfolio approaches**

-share matrix	Competitive strength matrix
ess units portrayed as omous ignoring sources of joint value	Assessing internal factors heavily dependent on subjective judgement — tendency to simplify to generic factors
Market share measured at consumer end — ignores resources shared at functional level	Assessing external factors heavily dependent on subjective judgement — tendency to simplify to generic factors
Market definition very subtle issue — market may be defined too narrowly or broadly	
Market share not necessarily a major factor in determining profitability	Business strength not necessarily a major factor in determining profitability
Industry growth not the only variable that explains growth opportunities	Multidimensional indicators can add too much complexity while unidimensional measures are too simplistic
Wider set of critical factors needed for reliable positioning of business units	Industry attractiveness somewhat ambiguous
Growth and profitability are not necessarily linked — may be a trade-off	Attractiveness and profitability not necessarily linked
Ideal business portfolios not necessarily balanced in terms of internal cash flow	Focuses on resource allocation, not cash flow balance
Attempts at quantification can disguise real issues	
More useful for competitive analysis than strategic guidance for the firm	More useful for strategic guidance of own firm than for competitive analysis

Source: Adapted from A. Hax and N. Majluf, 'The use of the growth-share matrix in strategic planning', *Interfaces*, 13, 1, 1983, 46–60; A. Hax and N. Majluf, 'The use of the industry attractiveness-business strength matrix in strategic planning', *Interfaces*, 13, 2, 1983, 54–71.

overview of the concerns associated with accounting for the risk–return relationship within the firm. It should be recognised that the reason the firm exists is to provide an internal mechanism through which JPEs and SA are capitalised. Given that the existence of these synergies implies that value additivity does not hold in the rationally structured firm, we are left with the quandary that simple NPV rules for investment do not hold perfectly. What is more interesting is that the failure of value additivity has implications for both the return associated with a specific diversification structure as well as the risk of that structure. We should note before proceeding that, when we speak of risk, we are talking about financial risk as measured by the firm's beta or cost of capital and not the variance of cash flows or profits.

If I know that a new model motor car shares production, marketing and distribution with my existing models, how do I appropriately account for the fact that the profits associated with the new model will be affected by decisions associated with the old models and vice versa? In addition, how do I account for the fact that when I invest in this new model, I alter the risk characteristics of my existing businesses? Figure 9.10 allows us to understand the risk–return characteristics of specific configurations based on the degree of synergy on the demand side or on the supply (production) side of the business equation. We begin by defining the nature of the interrelationships that can exist.

- *Complements.* Demand complements exist when the demand for one product is related positively to the demand for another product, for example, hardware and software. Supply complements exist because of economies of scope or other JPEs.
- *Substitutes.* Demand substitutes exist when the demand for one product is negatively related to the demand for another, for example, two brands of soft drink. Marketers refer to the existence of demand substitutes as cannibalisation. Supply substitutes exist when the cost of joint operation is greater than the cost of two separate operations. Normally this arises because the complexity costs overwhelm any cost-based gains.
- *Neuters.* Demand and supply are not correlated.

The key to understanding the risk–return relation shown in figure 9.10 is to note that risk and return always move in the same direction. In other words, whenever there is a profit gain from synergy, the positive relationship between the cash flows that drive this gain also serves to force the company to bear the additional cost of higher financial risk. This arises because (1) the nature of the economics implies that the products should be provided by a single company rather than a multiplicity of companies, and (2) because the cash flows are positively correlated and this positive correlation cannot be diversified away. Because the profit gain can only be realised when one firm is selling both

Figure 9.10: The relationship between risk and return and supply and demand relations

Demand Supply	Complements	Substitutes	Neuters
Complements	Return rises Risk rises	Return ??? Risk ???	Return rises Risk rises
Substitutes	Return ??? Risk ???	Return falls Risk falls	Return falls Risk falls
Neuters	Return rises Risk rises	Return falls Risk falls	No effect No effect

Source: T. Devinney and D. Stewart, 'Rethinking the product portfolio: a generalized investment model', *Management Science*, 34, September 1988, 1080–95.

products, financial risk will rise.

For example, if I choose to bring out a new model motor car that, on average, has positive synergies with my other models, my cash flows will be positively correlated and my stock market beta and cost of capital will rise. If I happen to bring out a model that cannibalises my existing models, then my cash flows would be negatively correlated and my cost of capital and beta would fall. Note that this is not pure financial diversification. In the first example, the return associated with having the two models together is greater than would be the case had they been sold separately. In the second example, the level of cannibalisation would be lower than if the two products were sold by separate companies. That is, I am better off cannibalising my own products than allowing the sales to be stolen by a competitor.

So what are the implications? First, the simple result is that prescriptions coming from the CSM, which imply that one expands into areas that fit with the company's strengths, will generally force the company to link its cash flows more tightly and will, therefore, increase financial risk. In fact, this is what is seen in reality. Focused companies have higher stock market betas than less focused firms in the same industry.[19] Second, as firms develop and change over time, not only do we expect their profitability to change but their risk should change as well. This is also seen in reality. Firms with the greatest turnover in product lines have the least stable equity betas. Third, returns and hurdle rates, as measures of investment approval, fail to account for the fact that interrelationships exist with internal firm investments. Therefore, firms will tend to approve too many high return investments since they have not adequately accounted for the increase in risk and will reject too many low return investments because they have not taken account of the decrease in risk.[20]

Perhaps what is most important about understanding the firm's internal risk–return relations is the fact that there is no 'free lunch' when it comes to diversification. Suppose a firm engages in unrelated or pure financial diversification. The firm is doing nothing more than buying, at the market price, a larger or smaller return with more or less associated risk. According to the approach discussed here, the firm that chooses to rationally invest in products and markets that build on company strengths will also pay a similar price but that price is considerably more difficult to assess.

Summary—what should go with what?

This chapter concentrated on four areas related to diversification: the determinants of related diversification, the characteristics of rational HI, the role of the corporate centre, and product/market portfolio models. The main lesson that comes from all this discussion is the importance of fundamentals as the drivers of diversification strategy. The onus should be on those desiring to diversify their corporation to prove that the structure they propose is the only one that truly adds value to the company. Just as we saw with VI, HI does not necessarily arise because of synergies but because those synergies cannot be capitalised without the firm operating all the related activities, in this case multiple products/markets.

The importance of information as the lifeblood of the modern corporation came to the fore in our discussion of the corporate centre. Ignoring possible failures in the financial markets, companies like Email, Pacific Dunlop, Hutchinson Whampoa, TATA, and Hanson Trust do not really need a corporate centre as we have defined it. Being true conglomerates, there is nothing crossing the company division barriers that could truly be considered strategic. There is no doubt that the managers of these companies will attempt to rationalise the importance of the mix of operations they are pursuing but from a strategic standpoint, they possess little value. Indeed, external pressures are beginning to change many of these companies as the recent reorganisations of both Pacific Dunlop and Hanson Trust attest.

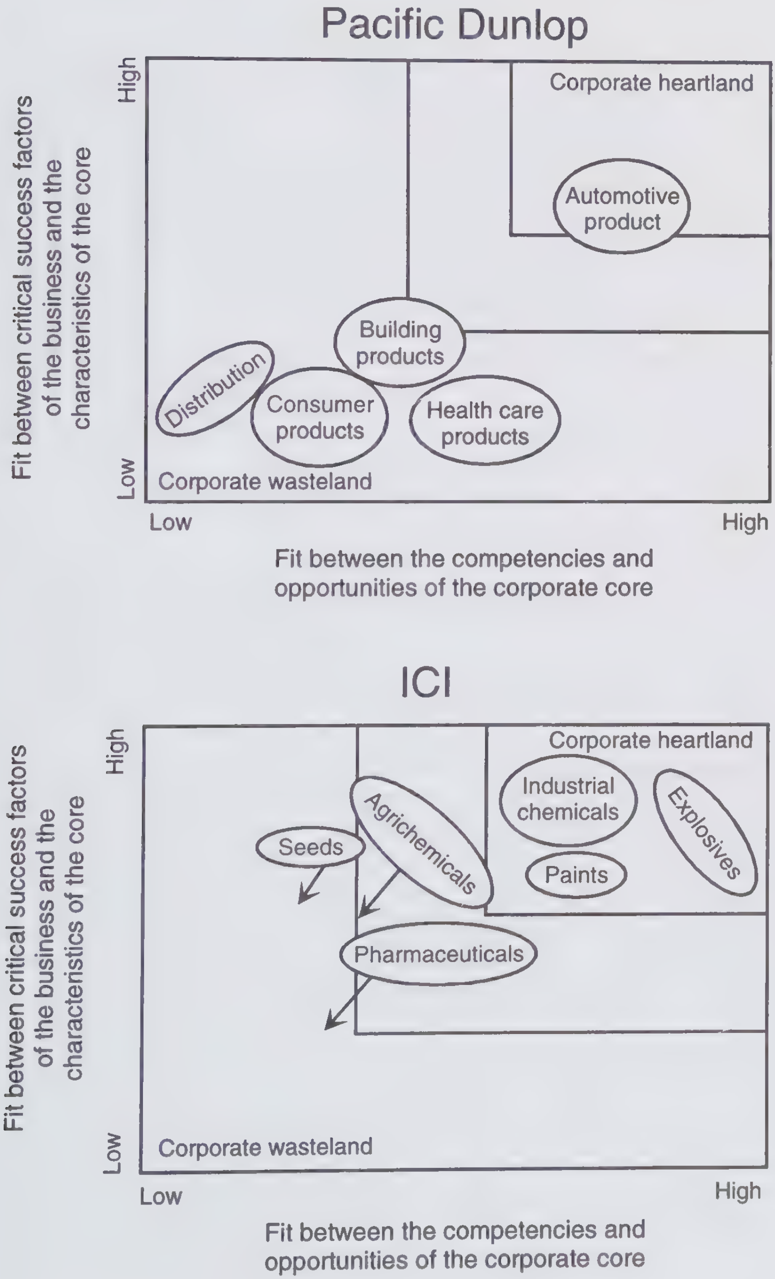
Product/market portfolio models were attempts by consultants to simplify financial investment analysis while attempting to develop techniques for strategic investment decisions. Most of the models tend to be logically flawed but serve as nice additions to the more rigorous financial analysis of alternative strategic directions. The three major problems with these techniques are: their lack of good definitions of their underlying constructs, market attractiveness and business strength; their failure to account for the synergistic relationships between the strategic decisions; and their failure to account for the financial risk associated with strategic decisions.

Ultimately, the issue of product and market diversification becomes: managerially and logically which products and markets allow the firm to most effectively match its resources and business processes to the current and potential value of the customers? Campbell et al[21] develop the idea of the 'parental core' of a corporation as a way of encompassing the internal aspects of this idea. Figure 9.11 provides a summary of how we might capture this idea simply. The horizontal axis relates the degree to which the opportunities presented by the business match the competencies of the corporate core. On the vertical axis we have the degree to which the key success factors necessary to be successful in the business match with the competencies of the corporate core. An initial reaction to this approach is that it is the same as the matrix approaches that we earlier viewed so critically. However, there are some key differences which we can address by posing the questions a manager should be asking about what businesses belong in the company:

- What is at the heart of the corporation? Note that this does not ask what does the firm do but what lies at the heart of the business in which it should be operating; in other words, it is a philosophical rather than purely descriptive idea.
- What is required to be successful in a particular business?
- Do the opportunities the corporation is facing match well with what the corporation is at its most fundamental?
- Does what is necessary to be successful in a particular business match with what the firm would see as its capabilities and competencies?

Two examples of this idea are presented in figure 9.11. The top figure presents the case of the Australian conglomerate, Pacific Dunlop. This company faces two problems: (1) what is the parental core that defines the company (there appears to be none) and (2) how do the parts of the company relate to this core (since there is no core this is a moot point!)? Note that because this company has no fundamental proposition other than making money, which company we put in the heartland does not really matter. The lower figure in figure 9.11 presents the pre-breakup ICI, the British company.[22] ICI's core was defined around applied chemical technologies. However, over time the required competencies in many fields of endeavour taken on by the company moved away from chemical processes and required more detailed knowledge of genetic engineering and biology (notably agrichemicals, seeds and pharmaceuticals). ICI's reaction to this pressure was to create a new company, Zeneca, that allowed

Figure 9.11: **Examples of rational portfolio determination**

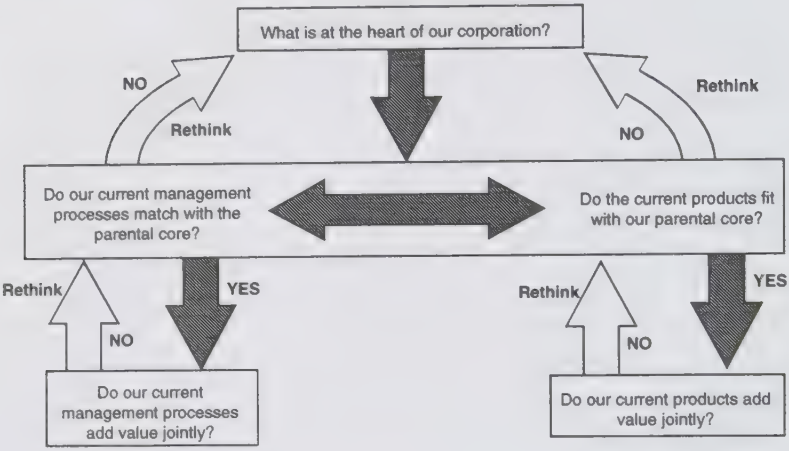


Pacific Dunlop

ICI

Corporate heartland
Automotive product
Building products
Distribution
Consumer products
Health care products
Corporate wasteland
High
Low
Fit between critical success factors of the business and the characteristics of the core
Low
High
Fit between the competencies and opportunities of the corporate core
Corporate heartland
Industrial chemicals
Explosives
Agrichemicals
Seeds
Paints
Pharmaceuticals
Corporate wasteland
High
Low
Fit between critical success factors of the business and the characteristics of the core
Low
High
Fit between the competencies and opportunities of the corporate core

Figure 9.12: What is at the corporate core?


What is at the heart of our corporation?
NO
Rethink
Rethink
NO
Do our current management processes match with the parental core?
Do the current products fit with our parental core?
Rethink
YES
NO
Rethink
YES
NO
Do our current management processes add value jointly?
Do our current products add value jointly?

these divisions to focus their efforts without a concern for the lost synergies with the chemical-based divisions.

We are left with the final question of how do we define what is at the core of the corporation? What embodies what the corporation does at its most fundamental? This is a dynamic process whereby management is asking itself a few fundamental questions about what it does and which customers it is attempting to satisfy. Figure 9.12 provides a simple schematic. Before asking the question of what is at the heart of the corporation, management needs to assess the linkages between products and processes and how these add joint value. If the answer is that they don't or that some don't while others do, then management needs to address the issue of how to configure the firm's portfolio of processes and products such that a consistent definition arises as to what the firm's parental core or heart really is. This can be addressed at a number of levels. One alternative is for the firm to reconfigure and divest itself of unrelated businesses. This was the ICI solution and is definitely a reactive strategy. A second alternative would be to ask the question, what can be done with the products and processes that the company currently possesses to make them more related? This option is proactive and puts management as the key determinant of what relatedness means.

Chapter 10

Strategic rivalry

Business is a game, the greatest game in the world if you know how to play it.

Attributed to Thomas J. Watson Sr

In Chapter 2 we spoke about the distinctions between games of luck, skill and strategy. The main distinction between games of luck and skill and games of strategy is that the former deal with situations where the player is doing battle with nature while the latter encompasses games where a player is doing battle with another player or set of players. Short-term currency trading, in spite of what currency traders will tell you, is primarily a game of luck. The minute by minute movements in foreign exchange rates are nothing but random. Greater returns are secured only by taking riskier positions. Long-term currency hedging made by a corporate treasurer is a different matter since it requires some economic and financial skills to place an educated bet on the future pressures facing specific currency regimes. The treasurer is involved in a game of skill against an opponent for whom the treasurer's actions are inconsequential, but treasurers with a poor understanding of economic relationships or weaker forecasting skills will be more likely to bet incorrectly. The interest rate decisions made by the US Federal Reserve Board and the German Bundesbank are strategic decisions since the impact of one central bank's decision is dependent on the decision of the other central bank. In 1991, when the Bundesbank tightened monetary policy in the face of rising reunification costs, there was little that could be done even by an institution as powerful as the US FRB. The lowering of US interest rates in light of increases in German rates would simply have led to a flow of cash from dollars into Deutschmarks. The great consternation expressed by central banks world-wide at German actions was in direct proportion to their economy's relationship with Germany's.

In our discussions so far, we have emphasised the basic strategic advantages a firm would like to have. Chapter 5 emphasised the advantages that often flow to a successful innovator. Chapter 6 focused on the potential for cost advantage, while chapter 7 explored the benefits to leaders in clearly identified segments or market niches. Although we have seen how the timing and sequence of entry can shape the opportunities open to various competitors, the underlying assumption has been that the company was operating in something of a static environment. Yet reality is hardly so accommodating and firms need to develop strategies based on the actions and reactions of rivals.

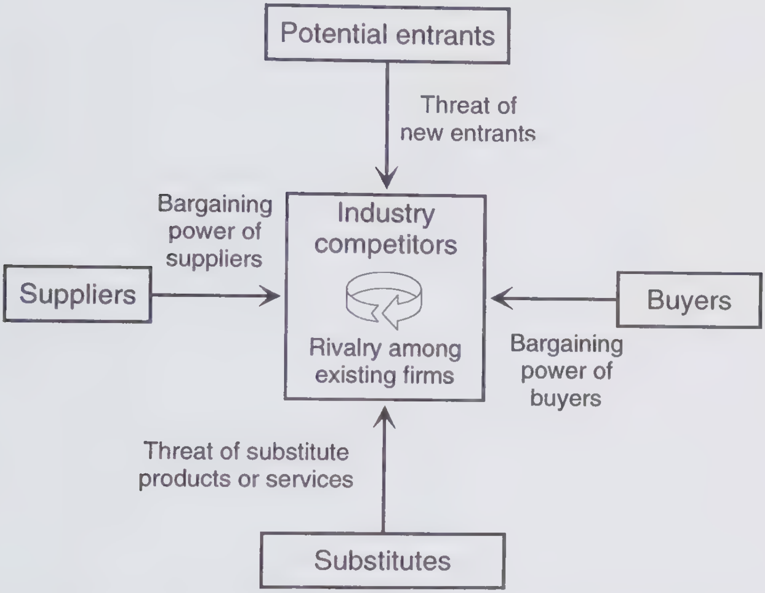
We now turn to the dynamics of competition or rivalry. In particular, we will look at the rivalry that occurs between competing firms in established and developing industries and the strategic issues and threats that arise as they vie to change their position relative to one another. Strategic rivalry exists when the purposeful behaviour of one participant in a market is substantively affected by the purposeful behaviour of another party in the same, or a related, market. This fact implies that strategic rivalry imposes on the decision maker four important requirements:

- they need to know who the other participants are; that is, they need to know their rivals;
- they need to know the impact of their actions on those other market participants;
- they need to know how those other players will react based upon this impact;
- they need to know what their own reactions to their rivals' actions will be.

Rivalry is the ultimate game of strategy for managers. However, it must be remembered that the goal in this game is not to engage in rivalry but to develop mechanisms that allow the firm(s) to avoid rivalry and all its profit-destroying characteristics. Strategic rivalry, unlike competitive rivalry, is the search for co-operation.

As we noted earlier, the formation of strategy is part art and part science. In addressing the above requirements, we will concentrate on logical mechanisms and ways of thinking that allow the manager to remove as much of the mystical 'art' surrounding strategic decision making and focus his or her efforts on applying specific tools and building on known relationships that ensure consistency in action. We will begin by reviewing the most common of the traditional approaches to rivalry, Porter's five-forces model. It provides a simple linkage between rivalry and economic notions of competition. We will then move on to examine the four requirements listed above. This will address the

Figure 10.1: Porter's five forces model of rivalry


Potential entrants
Threat of new entrants
Bargaining power of suppliers
Suppliers
Industry competitors
Rivalry among existing firms
Buyers
Bargaining power of buyers
Threat of substitute products or services
Substitutes

Source: M. Porter, 'Competitive Strategy: Techniques for Analysing Industries and Competitors', New York: Free Press, 1980.

questions: Who are my rivals? How will they be affected by my decisions? How will they react to my decisions? And, finally, how will I react to their reaction? This last section will focus on generating co-operation.

A framework for understanding rivalry

In his text *Competitive Strategy*, Michael Porter introduced a simple but powerful framework to describe the principal forces that bear on industry competition. The centrepiece of his framework is the five forces identified in figure 10.1. The question we need to address with this model is whether strategic rivalry is important to any specific market? If it is, the search for competitive advantage may bear fruit. If it isn't, and the market is perfectly competitive, then any advantages a firm possesses are likely to be transitory. Although competition will be fierce, rivalry will not exist in a strategic sense since the behaviour of the market participants will be immaterial to one another. These points highlight an interesting characteristic of competitive advantage, it only exists in the fragile world of actual or potential oligopolistic rivalry.

The four surrounding forces—potential entrants, substitutes, suppliers and buyers—are straightforward and define the constraints under which the company operates. They also affect the nature of the rivalry that will exist within the industry.

The *threat of new entry* constrains the price and service levels that existing competitors can offer. The source of this 'potential competition' is normally found in two places, overseas companies operating in the same or a related business and domestic companies operating in a related or structurally similar business. This includes not only firms operating in different markets or product categories but firms operating upstream or downstream. For example, Coca-Cola Amatil has recently been facing fierce competition from the American company Frito Lay. Frito Lay, a division of Pepsico, is the resurrected Arnott's snack foods, which, until November 1991, was half-owned by Pepsico and half-owned by Arnott's. Similarly, back in the United States, Frito Lay and other snack manufacturers have recently felt the force of a new entrant into their main business. Anheiser Busch's Eagle Snacks were a bit of a broadside for the traditional snack makers who didn't expect such a radical move by a staid brewing company. However, a look at the nature of beer distribution and selling in the United States shows a surprising similarity with the skills and resources needed to sell snacks. Both product categories are sold primarily through grocery and convenience stores, relying heavily on large-scale media image campaigns. These facts alone should have signalled to snack manufacturers that companies like Anheiser Busch were worthy potential competitors.[1]

Since every product or service has some substitute, the *closeness and availability of substitutes* sets limits on the actions of every competitor in an industry. At one level, all products are substitutes since they compete for the customer's budget. However, the greater the existence of substitutes and the ease of switching between them the less the latitude available to the competitors and the more intense their rivalry. This begs the question of how many substitutes are enough. If we examine the airlines or telecommunications industry, we see that two major competitors have been sufficient to reduce prices significantly (although not as low as would exist in perfect competition). This is due to the relatively homogeneous nature of the product, its cost structure, and the ease of customer search. However, the same cannot be said for medical specialists, where, despite the large numbers of practitioners, medical association restrictions and patients' inability to effectively search have provided doctors with a cushy non-competitive environment.

If either *buyers or suppliers are concentrated and powerful*, they will exert their bargaining power to limit industry profitability. At the limit, they may do so by threatening backward or forward integration and much of our discussion of vertical integration concentrated on the removal of this threat as one reason why a company might choose to integrate vertically.

More concentrated suppliers serve to reduce industry profitability and increase the rivalry for the scarce resource. This is the hallmark of the supply cartel such as OPEC and DeBeers. In both their cases, the ability to co-ordinate supply increased the price of their product(s). Similarly, as this co-ordination ability has eroded because of increased non-cartel supplies, prices have fallen and the profits of purchasers increased. OPEC found that internal co-ordination broke down once previously non-economic production came on-line from non-OPEC producers. DeBeers' Central Selling Organisation, which controls the wholesale diamond market, has had difficulty bringing the Russians into line (they control about a quarter of world output) as the two battle for their share of the diamond cartel.

More concentrated buyers, as are found in the supplier arrangements with motor car manufacturers, severely restrict the profitability of the supplier market thereby increasing the rivalry for business and profits. José Ignacio Lopez's key attribute while at General Motors was his ability to squeeze large price concessions from suppliers, to the tune of US$4 billion in 1992–93. He did this by opening up all contracts for re-bidding and, even then, the low bidder was, many times, forced to negotiate its price even lower. Over time this trend has accelerated. In 1994 Ford used more than 700 suppliers in producing its Tempo in North America. The 1995 Mondeo uses less than 230 suppliers world-wide.

What determines *the nature and extent of rivalry*—the box at the heart of Porter's diagram? According to Porter, the basic characteristics and changing pattern of the four main forces will drive the rivalry within the industry. These can show up in any number of ways. For example, progressive innovation in the rolling of aluminium sheet and the design of aluminium cans has had a major impact on parts of the steel industry—over the past 30 years, the aluminium beverage can has effectively substituted for tin plate. Changes in government policy can change the likelihood of balance of power between buyers and sellers almost overnight, as we have seen in Australia with banking deregulation, the abandonment of the two airline policy, and the entry of Optus and Vodafone into the telecommunications sector. Reductions in tariff policy and general microeconomic reform have increased the availability of substitutes in an increasing number of industries, further intensifying the rivalry of their participants. Case 10.1 provides an example of the application of Porter's five forces approach.

Case 10.1 Five forces and the biotechnology industry

Porter's five forces model can be illustrated with reference to the biotechnology industry in the United States. Biotechnology is the use of living organisms to synthesise products for commercial application. In 1992, approximately 77 per cent of public biotech companies in the US were developing pharmaceutical applications, 53 per cent were primarily involved in therapeutics, and 24 per cent were involved in diagnostics.

In 1991, there were 1,100 biotechnology firms in the US with sales exceeding US$4 billion, about 200 of which were public companies. The intensity of rivalry among existing competitors is immediately apparent. Most biotechnology companies, both large and small, were struggling to survive in the early 1990s. Although conventional wisdom in the industry suggested that top scientists and secure funding were sufficient for success, even firms with these resources faced significant competitive challenges. In 1991, 82 per cent of biotechnology companies were unprofitable and 76 per cent employed fewer than 50 people. Only about 30 companies had grown large enough to employ more than 300 people.

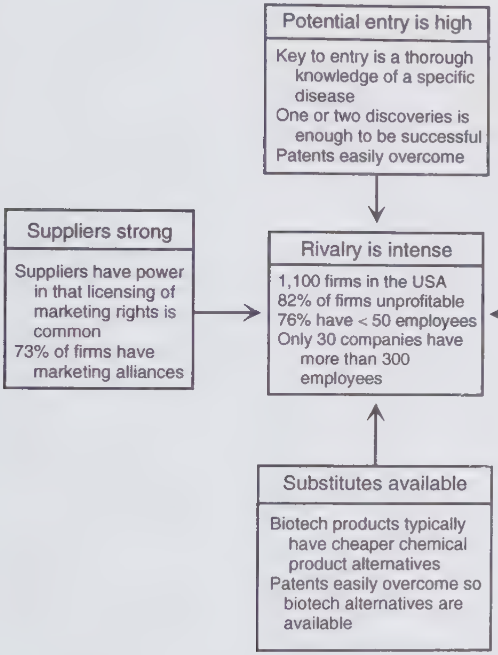
The large number of firms indicates that barriers to entry in the biotech industry are not significant. Traditional drug companies typically screened thousands of compounds in search of one that could cure disease. Using this trial and error method, the cost to research, develop and commercialise a drug is enormous. With biotech, such trial and error methods are unnecessary. What is needed is a thorough understanding of a particular disease to identify and synthesise a genetically engineered product that will be an effective treatment. Many firms count on one or two blockbuster products to build their success. A major therapeutic could generate as much as US$1 billion in sales.

The use of patents can grant a company 17 years free of competition for a patented product. However, biotechnology research is easy to imitate, and these patents are not easily defended, since minor changes in the manufacturing or formulation process can generate a technically new product with the same qualities. Conflicts over patent rights are common in this industry, with cross-licensing a possible solution. Large-scale manufacturing of some biotech products is based on two standard and relatively inexpensive techniques: fermentation and cell culture. Economies of scale are not necessarily significant.

Pressure from substitute products occurs when biotech products treat the same problem as chemically produced drugs. Although biotech drugs are thought to be safer and more effective than chemically produced drugs, they are often considerably more expensive. The benefits of biotech products can be outweighed by these costs.

Biotherapeutics are sold to physicians, pharmacies and hospitals, both directly and through wholesale distributors. In hospital sales, the hospital's pharmacy and therapeutics committee decides what products the pharmacy should stock. An effective sales force for US hospitals could be as small as 25 people, indicating considerable buying power on the part of hospitals. Sales to individual pharmacies or physicians require many more sales calls and a sales force of around 1,500. Sellers also have significant bargaining power, since most companies market their products through larger biotech or pharmaceutical companies with established relationships and reputations in the health care marketplace. The licensing of marketing rights is a common practice. In the case of diagnostic pharmaceuticals, 73 per cent of firms have marketing alliances. In

A summary of the five forces model in biotechnology


Potential entry is high
Key to entry is a thorough knowledge of a specific disease
One or two discoveries is enough to be successful
Patents easily overcome
Suppliers strong
Suppliers have power in that licensing of marketing rights is common
73% of firms have marketing alliances
Rivalry is intense
1,100 firms in the USA
82% of firms unprofitable
76% have < 50 employees
Only 30 companies have more than 300 employees
Buyers strong
Hospitals/government have considerable buying power
Doctors/pharmacies are rarely price conscious
Patients have very low price sensitivity
Substitutes available
Biotech products typically have cheaper chemical product alternatives
Patents easily overcome so biotech alternatives are available

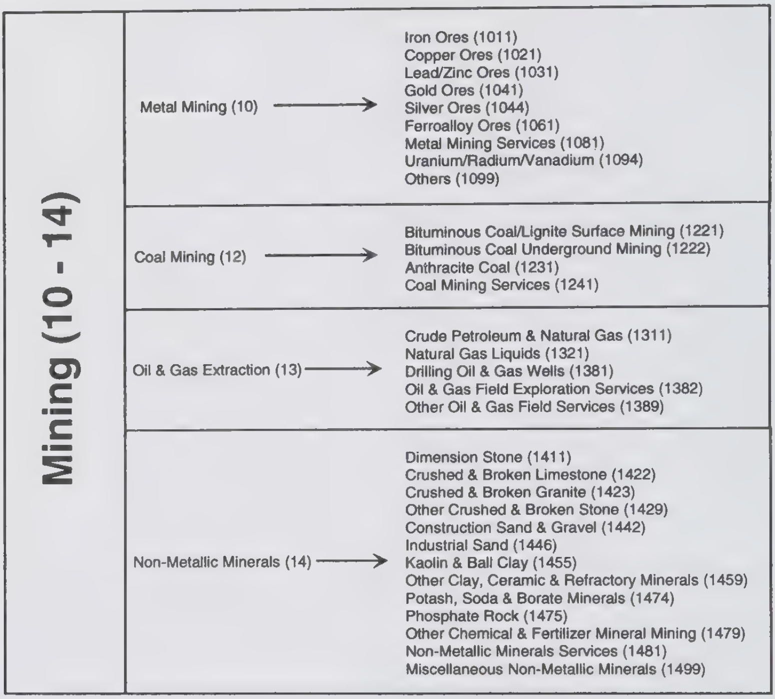
areas where biotech firms are geographically concentrated, they have formed buying groups to collectively negotiate the best prices from distributors of laboratory supplies.

Source: This example is adapted from Harvard Business School Case 9-792-082, *Biotechnology Strategies in 1992*, 1993.

Defining competitors

It may sound trivial but before one can discuss strategic decisions it is necessary to know who are one's competitors. The most elementary way to think about competitors is through simple industry definitions such as, 'my competitors are all other building supply companies'. The most useful way of making such comparisons is with the help of SIC (Standard Industrial Classification) codes. SIC codes are defined around two-digit and four-digit hierarchical breakdowns of basic industries. A general listing of SIC codes is given as an appendix to the book. Figure 10.2 provides an example using the SIC codes for mining. Mining

Figure 10.2: Example of SIC industry definitions for mining


Mining (10 - 14)
Metal Mining (10)
Iron Ores (1011)
Copper Ores (1021)
Lead/Zinc Ores (1031)
Gold Ores (1041)
Silver Ores (1044)
Ferroalloy Ores (1061)
Metal Mining Services (1081)
Uranium/Radium/Vanadium (1094)
Others (1099)
Coal Mining (12)
Bituminous Coal/Lignite Surface Mining (1221)
Bituminous Coal Underground Mining (1222)
Anthracite Coal (1231)
Coal Mining Services (1241)
Oil & Gas Extraction (13)
Crude Petroleum & Natural Gas (1311)
Natural Gas Liquids (1321)
Drilling Oil & Gas Wells (1381)
Oil & Gas Field Exploration Services (1382)
Other Oil & Gas Field Services (1389)
Non-Metallic Minerals (14)
Dimension Stone (1411)
Crushed & Broken Limestone (1422)
Crushed & Broken Granite (1423)
Other Crushed & Broken Stone (1429)
Construction Sand & Gravel (1442)
Industrial Sand (1446)
Kaolin & Ball Clay (1455)
Other Clay, Ceramic & Refractory Minerals (1459)
Potash, Soda & Borate Minerals (1474)
Phosphate Rock (1475)
Other Chemical & Fertilizer Mineral Mining (1479)
Non-Metallic Minerals Services (1481)
Miscellaneous Non-Metallic Minerals (1499)

is generally defined in four two-digit categories: metals (10), coal (12), oil and gas (13) and non-metallic minerals (14). Below these categories are the finer four-digit industry distinctions. Based on the mining classifications, BHP is involved in four metal mining industries—iron ores (1011), copper ores (1021), gold ores (1041), ferroalloys (1061); two coal industries—bituminous coal through surface (1221) and underground (1222) mining; and two oil and gas industries—crude petroleum and natural gas (1311) and natural gas liquids (1321).

Although an SIC-based definition of competitors provides some useful comparisons at one level, such as benchmarking against some unbiased sample, it is rare that a company is in direct competition with every company statistically defined as being in its industry category. It is also likely that the firm may be in competition with many companies outside its industry. For example, the financial information company Bloomberg lists almost 40 companies as being competitors of BHP. A simple examination of 36 of these companies for which information is available indicates that they are involved in 160 different SIC-defined industries! (See table 10.1.) Even though BHP is involved in only eleven basic industries concentrated around mining and steel, its competitors span mining, construction, manufacturing, and services. Such complexity makes comparisons difficult, if even meaningful at all. For example, how do we know that the 8.6 per cent return on sales for BHP is good or bad when compared with the 7.7 per cent earned by Anglo American or the 2.8 per cent earned by Cyprus Minerals? Is the difference due to management? the mix of industries? or the distribution of assets across industries?

There are numerous other problems with defining competitors based on SIC classifications. For example, it does not account for the fact that some companies are specialists even within sub-markets. These sub-markets may be local, as in the case of cement where transport costs restrict the size of the market, or they may be specialist niche markets, as in the case of plasterers as a sub-market of the building and construction industry. Also, aggregate industry definitions do not account for the fact that many companies span the standard industry definitions. For these companies, such a structure may be rationally based on their core skills and capabilities.[2] If we examine our BHP example again, we see that there are some firms we could call primarily mining-based companies. These include BHP, Anglo American, Cyprus Minerals, INCO, and RTZ. Other companies are involved in oil and gas. These include Ashland, ARCO, BHP, BP, Chevron, Du Pont, Exxon, Mobil, Norsk Hydro, Pennzoil, Petrofina, Phillips, Shell, Sun, Texaco, Total, Unocal and USX. Finally, the last group is involved in metal fabrication and includes BHP, Alcan, Alcoa, Bethlehem Steel, Inland Steel, LTV, Nippon Steel, Nucor, Thyssen and USX. However, all these groups are involved in the extraction, refining and processing of basic raw materials, activities requiring similar basic skills.

How might we account for the fact that industry definitions are, at times, too broad to provide a useful picture of the nature of rivalry in an industry? Through the use of *strategic groups* we can subdivide the market into segments that better reflect the nature of competition within the industry. But how might we do this? Thinking back to our discussion of segmentation, we formed customer segments by clustering together those individuals whose needs and wants were most similar. In theory at least, we can do the same thing with companies. However, we need to come up with some way of capturing the essence of what we mean when we say that company Y is in more direct competition with company X than with company Z. Theoretically, we can argue that, given the companies operate in the same basic industry groups, our criterion for greater rivalry is the sensitivity of one company's performance to the actions of another company.

If we had operative measures of performance and actions this would be relatively simple. Our measure of strategic interrelatedness would simply be the cross-elasticity of company i's performance to company j's actions. In

Table 10.1: BHP and competitors: industry breakdown

Company	Operating In Industries (SIC)	Percentage of industries overlapping with BHP
BHP	1011, 1021, 1041, 1061, 1221, 1222, 1311, 1321, 3312, 3313, 3357	100
Alcan	1099, 2816, 3334, 3353, 3353, 3355, 3399, 3423, 3442, 3444, 3448, 3463, 5051	1
Alcoa	2819, 3334, 3353, 3354	1
Amoco	1311, 1321, 2221, 2819, 2821, 2865, 2911, 3089, 4612, 4613, 5171, 5172	18
Anglo American	1011, 1021, 1031, 1041, 1221, 1231, 1241, 6799	36
ASARCO	2879, 3273, 3331, 3339, 3341, 3356	1
Ashland	3531, 4612, 5169, 5172, 5541, 8711, 1221, 1331, 1629, 2911, 2992	9
Arco	1221, 1222, 1311, 1321, 1382, 2911	36
Bethlehem Steel	1221, 3312, 3315, 3316, 3462, 3731, 5051, 5989	18
British Petroleum	1311, 1499	9
Chevron	1311, 1382, 2911, 2992, 5099, 5541	9
Cyprus Minerals	1021, 1041, 1044, 1061, 1221, 1222, 1231, 1459, 1499, 3241, 5032, 5094	45
Du Pont	1221, 1311, 2297, 2816, 2819, 2822, 2824, 2851, 2865, 2869, 2879, 2911, 3089, 3861, 5169, 5171, 5172, 5541	18
Elf Aquitaine	1311, 1479, 2812, 2819, 2821, 2833, 2841, 2842, 2843, 2869, 2873, 2874, 2879, 2899, 2992, 3089, 3295, 3363, 3369, 3496, 3563, 3564, 3613, 3629, 3648, 3663, 3675, 3679, 3691, 3696, 3699, 3843, 4789	9
Exxon	1311, 1382, 2911, 4612, 8731	9
Hanson	1221, 2082, 2084, 2085, 2096, 2131, 2261, 2298, 2299, 2522, 2599, 2522, 2599, 2816, 2899, 3111, 3144, 3149, 3251, 3271, 3273, 3429, 3442, 3444, 3446, 3524, 3531, 3546, 3569, 3572, 3582, 3621, 3629, 3645, 3646, 3679, 3714, 3999, 5099, 5812	9
INCO	1021, 1041, 1044, 1061, 1099, 3312, 3356, 3449, 3462, 3511, 3548, 8731	36
Inland Steel	3312, 3316, 5051	9
Koch	212, 1311, 1321, 2911, 3559, 3589, 4612, 4922, 4923, 5172	27
LTV	3312, 3316, 3317, 3533, 3644, 5084	9
Mobil	1311, 2911, 4612, 4613, 5172	9
Nippon Steel	1099, 1311, 2899, 2911, 3312, 3341, 3399, 3442, 3499	18
Norsk Hydro	1311, 2819, 2911, 2992, 5191, 8731	9
Nucor	3312, 3399, 3411, 3429, 3442, 3448, 3499	9

Table 10.1: BHP and competitors: industry breakdown—continued

Company	Operating In Industries (SIC)	Percentage of industries overlapping with BHP
Pennzoil	1311, 1479, 2911, 6794	9
Petrofina	1221, 1311, 2821, 2851, 2869, 2911, 2999, 3069	18
Phelps Dodge	1021, 2819, 2895, 3331, 3339, 3353, 3356, 3496, 3714, 5311, 5411	9
Phillips Petroleum	1311, 1382, 2992, 4612	9
Repsol	1311, 2911, 4613, 5172	9
Royal Dutch Shell	1231, 1241, 1311, 1382, 2869, 3339	9
RTZ	1011, 1021, 1031, 1041, 1044, 1061, 1099, 1221, 1222, 1459, 1479, 1499, 2819, 3331, 3339, 3341, 5051	56
Sun	1221, 1311, 1321, 2911, 4424, 4613, 4789, 5169, 5171, 5172	27
Texaco	1311, 1382, 2911, 2992, 2999, 4612, 4613, 5171, 5172, 5712	9
Thyssen	3312, 3316, 3325, 5051, 6221, 7389	9
Total	1311, 2851, 2891, 2893, 2911, 3011, 3021, 3053, 3069, 5541	9
Unocal	1099, 1311, 1321, 2873, 2911	18
USX	1311, 1321, 2819, 2911, 3312, 3317, 3339, 3341	27

mathematical terms, the more negative is the ratio,

$$\varepsilon_{\text{performance}_i,\ \text{actions}_j} = \frac{\text{percentage change in performance}_i}{\text{percentage change in action}_j}$$

the greater the degree of interrelatedness that should be exhibited between the companies.[3]

However, we rarely have good measures of competing firms' actions and, even if we did, it would be difficult to link specific performance measures to specific actions. A second best solution is to assume that similarity is related to company interrelatedness and, therefore, companies that look similar are strategic rivals. All we need now is a measure of similarity that is not simply vague eyeballing. Most empirical studies of strategic groups rely on what are known as distance measures. One simple distance measure would be to use a simple weighted average of the difference between each company pair on some criteria, such as financial accounting, marketing or asset. Therefore, if X_{ij} represents the value of company i on attribute j, then one measure of the similarity of company i with company k would be the weighted average squared difference:

$$D_{ik} = \Sigma_{\text{all } j}\, w_j(X_{ij} - X_{kj})^2/\sigma_j^2.$$

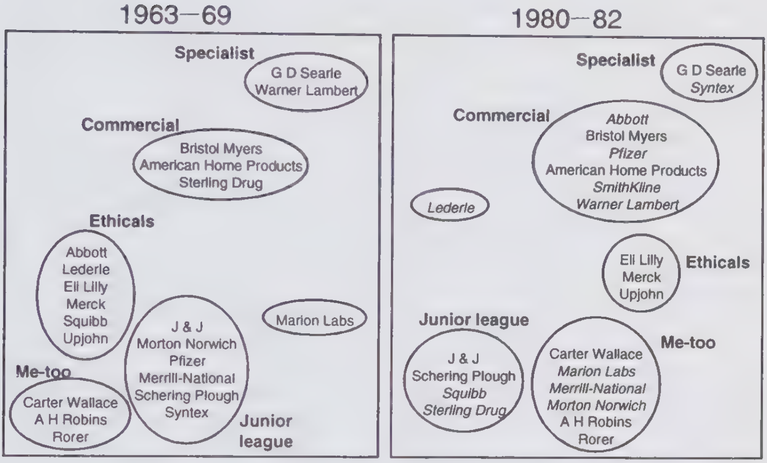
where σ_j^2 is the variance of attribute j and w_j is the weight given to attribute j.[4] D_{ik} is then simply the average squared standardised difference of some set of attributes deemed to be important for measuring company interrelatedness and, hence, strategic group membership. For each pairing of companies there would be a distance measure that determines its position in some space. An example of such a space for the pharmaceutical industry is shown in figure 10.3.[5] Each cluster of companies represents a group based on its similarity where similarity is defined as sales within traditional pharmaceutical sub-markets, such as cardiovasculars and anti-infectives.

Similarity-based strategic groups are a useful tool as long as two criteria are met. First, mobility across group boundaries must be limited to the extent that entry into and exit from the strategic group is difficult. If we have correctly defined the strategic group this should directly follow since the commitment of irrevocable assets will constrain firms' ability to change their strategic directions. Second, the nature of rivalry within the group must be different from the nature of rivalry between groups. If this were not the case, the operative reason for constructing strategic groups, as opposed to describing competition at the industry level, would be moot.

There are reasons to believe that there are mobility barriers between groups but that these barriers are porous. The source of immobility lies in the transferability of the firm's assets and competencies across group boundaries. In the case of pharmaceuticals, it takes different skills and capabilities to be a maker of ethical drugs as opposed to a maker of specialist pharmaceuticals. Also lending support to the existence of mobility barriers is the fact that pharmaceutical group membership was reasonably stable over a 21-year period. Yet, approximately 10 of 21 firms changed their group membership (these are italicised on the figure). This can, of course, be due to the imperfect nature of the technique used to form the groups. Alternatively, it could be a reflection of purposeful action on the part of the companies. This is supported by anecdotal evidence as well as the fact that much of the movement was to adjacent groups. The major movements were firms either making it into the big leagues, such as Pfizer and Syntex, or firms falling into the second ranks, such as Marion Labs, Merrill-National and Sterling Drug.

The second criterion is almost tautological but is of critical importance. If rivalry between groups was no different from rivalry within groups then the existence of strategic groups, as we have defined them, would be meaningless. If this were true then the clusters of firms we have come up with would be

Figure 10.3: Strategic groups in the pharmaceutical industry


1963–69
Specialist
G D Searle
Warner Lambert
Commercial
Bristol Myers
American Home Products
Sterling Drug
Ethicals
Abbott
Lederle
Eli Lilly
Merck
Squibb
Upjohn
J & J
Morton Norwich
Pfizer
Merrill-National
Schering Plough
Syntex
Marion Labs
Me-too
Carter Wallace
A H Robins
Rorer
Junior league
1980–82
Specialist
G D Searle
Syntex
Commercial
Abbott
Bristol Myers
Pfizer
American Home Products
SmithKline
Warner Lambert
Lederle
Eli Lilly
Merck
Upjohn
Ethicals
Junior league
J & J
Schering Plough
Squibb
Sterling Drug
Me-too
Carter Wallace
Marion Labs
Merrill-National
Morton Norwich
A H Robins
Rorer

Source: K.Cool and I. Dierickx, 'Rivalry, strategic groups and firm profitability', *Strategic Management Journal,* 14, 1993, 47–59. The original grouping was based on three dimensions. The example used here aggregates the information so it can be presented in two dimensions.

reflecting something, but that something would have nothing to do with the nature of rivalry in the industry. Henderson,[6] drawing his analogy from Darwinian biology, makes the argument that competition will be fierce within the strategic group since firms are fighting over the same fundamental customer (food) source. Hence intra-group rivalry will be more intensive than inter-group competition. Others argue for the opposite.[7] Within a strategic group, we have companies with similar assets and experiences, dealing with similar customers and suppliers, and, therefore, more informed about the nature of their competitors. These companies, because of their basic similarity, will be more likely to respond in a similar fashion to external and internal threats. In addition, because of the potential high cross-elasticities to each other's behaviour (our ε measure), they will be more likely to have developed tacit co-ordination mechanisms. Between group rivalry will be mainly competition among similar but differently structured firms, with different competencies and assets. It is unlikely that they will be able to co-ordinate their behaviour and are less likely to respond to external influences in similar ways. Hence, rivalry will be more intensive across strategic groups than within the individual strategic groups.

Empirically, there seems to be fairly convincing evidence that correctly formed strategic groups exhibit different patterns of competition and that inter-group rivalry is more damaging than intra-group rivalry. For example, Peteraf examined the nature of competition in the airline industry and found that competition within strategic groups was less than that between groups. When strategic group partners faced each other in terms of their route structure, their fare was approximately 9 per cent above the average. When two companies from different strategic groups competed for the same route, their fares were approximately 7.5 per cent below the average fare.[8]

The benefit of strategic groups is that they give us a more accurate picture of the true structure of rivalry within an industry. This allows management to prioritise its strategies based on the importance of the relevant groups. However, the technique, although logically sound at one level, has some practical difficulties. These include the measures used to define the groups, the dimensions on which we define the groups, the techniques used to analyse the groups, and the usefulness to managers.

The most obvious difficulty in coming up with strategic groups is picking the measures that are relevant for characterising the nature of rivalry. A cursory examination of some of these criteria show they range from solid measures like financial, manufacturing and product line items to the more vague measure of strategic posture.[9] The end result is that group structure can be significantly dependent on the measures employed.

A second difficulty is reducing the scope of rivalry into one simple dimension, group membership. For example, Coca-Cola might be in the same strategic group as Pepsi Cola as long as we were concentrating on soft drinks. However, the minute we change the focus to fast food operations, Pepsi Cola's relevant group membership would change since Coca-Cola owns no fast food operations. A better way to think about strategic groups is to view them as 'fuzzy'. In other words, rather than assuming that a specific company is either in or out of a group, we can think about strategic groups as possessing different levels of membership in different groups. Therefore, Pepsico is not just within the group that defines soft drink competition but also in the group that defines fast food competition.

A third issue is the technical issue of determining group membership. Almost all studies of strategic groups use some form of clustering technique. These procedures have a tendency to find random clusters in data where none really exist. It is interesting that in our pharmaceutical example presented in figure 10.3, approximately one-half of the firms switch strategic groups, just what we would have expected from a random sample!

Many of the problems with strategic groups come from the fact that they are developed atheoretically. Since we do not know what divides industries and what divides industries into sub-industries, we are faced with the unhappy prospect of mining the data; and usually very poor data at that. This leads to the prospect that what comes out of these analyses is probably no better than what might have been achieved by simply asking managers who are their nearest competitors. For example, with what do Cool and Dierickx provide us that could not have been

Figure 10.4: Payoff matrix for a simple advertising game

		Company A	
		No advertising	Advertise
Company B	No advertising	100,100	150,50
	Advertise	50,150	70,70

(Company A, Company B) payoffs

gleaned from a few simple conversations with pharmaceutical executives?

Competitive reaction

The hallmark of rivalry is the nature of the reaction rivals have to one another's actions. In chapter 2, we used the Deere-Caterpillar pricing example to introduce the idea of a payoff matrix. The *payoff matrix* allows us to specify the gains or losses from specific combinations of actions by players in a strategic game. However, this is only one aspect of the nature of competitive reaction that we need to emphasise. If we think about rivalry as a strategic game, we need to specify, firstly, the *rules* of the game. For example, the rules may specify that the game is *sequential*—each player moves in some predetermined order following the actions of a previous player; or *simultaneous*—all players move at the same time. Additional rules could specify if the game is repeated over a number of periods or whether it is simply a one-shot deal. We may also specify the *information structure* of the game. Are the players allowed to *co-operate* or is the game *non-co-operative*? Will the players have *complete* or *incomplete knowledge*?

Payoffs and complete information

Let us begin by looking at competitive reaction in the relatively simple case of complete information. Consider a simple one-period advertising game as specified in figure 10.4. Complete information implies that all market

Table 10.2: Competitive reactions given competitor moves

If company A:	Company B should:	If company B:	Company A should:
advertises	advertise	advertises	advertise
does not advertise	advertise	does not advertise	advertise

participants know all the rules and the structure of the payoffs. This ensures that there are no surprises and the impact of specific strategies on specific players is clear.

The payoffs represent profits and are structured such that, if one company advertises but the other does not, the advertising firm is better off. However, if both firms advertise then they would have been better off if neither firm advertised. Should the firms advertise or not? Well, it depends on the rules and the information structure of the game. Suppose the companies had to make their decisions in advance and could not reveal their actions. The end result is that they both have little choice but to advertise, clearly an inferior solution. The structure of their actions is shown in table 10.2. Both company A and company B should advertise regardless of what the other company does. This is known as a *dominant strategy* since it does not directly depend on the actions of the other company.

This game also represents what is known as a *prisoners' dilemma*. A prisoners' dilemma is a non-co-operative game where the outcome is worse than the starting position. Case 10.2 provides a nice example of why Marlboro Friday was a classic prisoners' dilemma.

Case 10.2 Marlboro Friday

On 2 April 1993, Philip Morris changed the rules in the big brand pricing game. Faced with declining share, Philip Morris announced a 15 per cent price reduction of its flagship brands of cigarettes, including Marlboro. The price change reduced Marlboro's premium with respect to discount brands from US$0.80 to only US$0.40. According to Gavin Landor of Goldman Sachs, 'Philip Morris was quite clear that it was sacrificing margins in the short-run for volume . . . The real benchmark is not what it cost, but what it would have cost had they done nothing'. Immediately following the Marlboro announcement, RJR-Nabisco and B.A.T. Industries reduced the price of their flagship brands, including Camel and Kool.

In recent years, the major cigarette companies were finding their premium cigarettes were losing market share to discount brands. In many cases, these low-priced brands were manufactured by small local operations. In other cases, such as Philip Morris' Basic, they were budget brands produced and marketed by

Figure A: Tobacco company stock price reactions to a price war

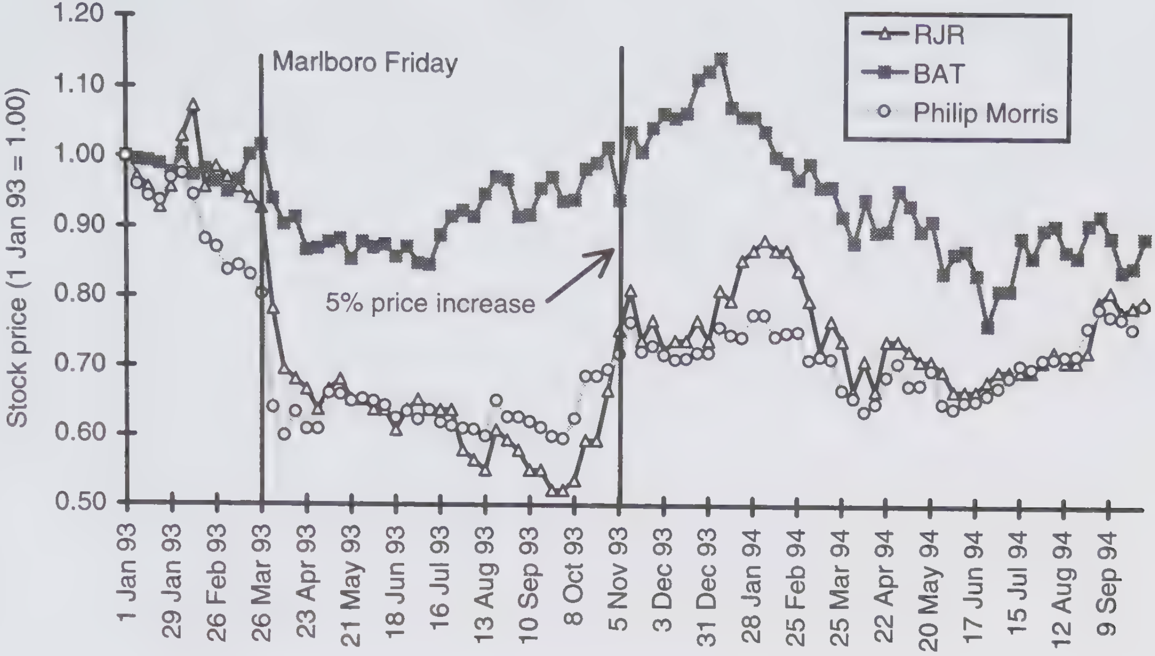
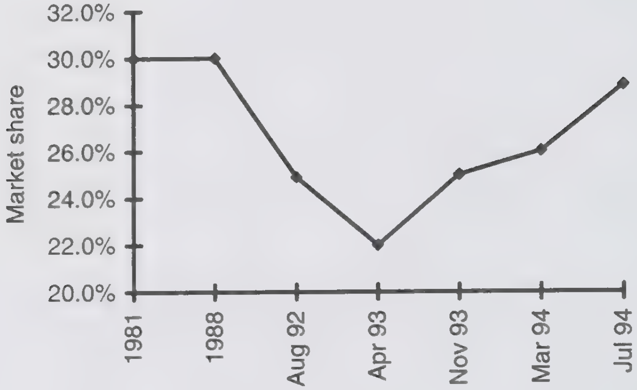


Figure B: Marlboro market share



the major corporations. Whoever the producer was, there is little doubt that there was a radical change in consumers' purchasing habits as they flocked from the mega-brands to the low-priced alternatives. By 1993, the market share of discount brands was approaching 30 per cent.

From a market share perspective, Philip Morris' action had the desired effect. By mid-1994, it had regained a sizeable proportion of the volume lost to the discounters. However, from a profit perspective the price war appears less of a sure thing. On Marlboro Friday alone, Philip Morris' stock price fell from US$64 to US$49, dragging down the Dow Jones index by 50 points and wiping out 23 per cent of the company's value (see figure A). RJR-Nabisco and B.A.T. had little recourse but to follow suit and found similar reactions on the part of the marketplace. As figure B shows, there has been little to change investors' minds that the action was little more than a lose-lose bet. Philip Morris' 1993 profit was down a whopping 46 per cent while that of RJR-Nabisco had fallen by 43 per cent.

Some sanity appears to be returning to the market. On 10 November 1993, RJR increased the price of its brands by 5 per cent. Philip Morris and the other major producers followed suit as did the stock market. Yet overall, even as profitability has crept back in 1994, the companies' stock prices have remained down. As of October 1994, Philip Morris and RJR-Nabisco are trading at a 20 per cent discount from 1 January 1993. B.A.T. Industries is down by 11 per cent.

Suppose we allowed players to play the game over two periods and to move sequentially but not co-operate. The structure of the payoffs implies that:

(1) the first mover wins in the period in which they have an advantage (a gain of 50), (2) the advantage will last only one period since the non-advertising company is always better off in an advertising war rather than appeasing the advertising firm (losing only 30 as opposed to losing 50), and (3) the first mover always wins more in the period of dominance than they lose in the period of the advertising war, thereby making it worthwhile to instigate the war. The end result is that they both move aggressively in an attempt to be the first firm advertising. Unlike the prior example, where both players lose, the sequential aspect of the second example implies one winner and one loser.

This example also highlights how price or advertising wars could start even when no one firm possesses a cost advantage. If you were in a world with very high discount rates (implying that money today is much more valuable than money tomorrow), the value of the potential first period gain can be much greater than the losses due to the war in the subsequent periods. Therefore, we would expect simple wars like this to be more likely in situations where real interest rates were high or when immediate gains are more important than future losses. This latter reason is the force behind price wars in high fixed cost industries, such as airlines. Faced with the need for immediate cash flow, struggling airlines are more than willing to sacrifice current profits for cash even if it potentially hastens the demise of the company. Case 10.3 highlights the interaction between competitors in the television and movie industries and how the fact that one company must ultimately pre-commit to a show-time combination in their scheduling (they must move sequentially) opens up opportunities that other companies view as too enticing not to exploit.

Finally, let's allow the companies to co-operate and play the game over an indefinite number of periods. Let us also assume that the discount rate is low. The solution here is that neither will advertise since the joint gains from not advertising are greater than the gains from any other combination of outcomes. The only question is: how is the co-operation to be operationalised? In other words, we need a *co-operative mechanism*. What might be a co-operative mechanism in this case? Since the structure of the payoffs implies that appeasement is worse than an advertising war, it is the threat of the advertising war that would be the co-operative mechanism. All the firms have to do is reveal that they would engage in a minimum two-period advertising war every time their rival advertised. Such a threat is *credible* since the offending company knows that the threat will be used since it is in the threatening firm's best interest to use it.[10]

There are a number of ways to make commitments credible. We can think about two main forces behind credibility.[11] The first factor is the ability to alter the incentives and payoffs such that specific actions are clear. This can be done by *establishing a reputation* or *writing formal contracts*. As John F. Kennedy noted regarding the Berlin crisis of 1961, 'If we do not meet our commitments . . . where will we later stand? If we are not true to our word there, all that we have achieved in collective security, which relies on these words, will mean nothing.'[12] Kennedy redefined the structure of the conflict from one over Berlin to one affecting the entire Western alliance. He upped the ante so to speak. Formal contracts commit agents to specific actions by prearranged agreement on the penalties associated with not meeting commitments. A subsidiary facilitator towards making oneself credible is to *break the game into smaller steps*. Normally, the gains associated with cheating at one of the intermediate stages is more than offset by the loss associated with the agreement falling apart. The second approach to establishing credibility is removing the possibility of backing away from the commitment. This can be done in a host of ways, two of which are *burning one's bridges* and *leaving the outcome to chance*. William the Conqueror signalled the depth of his commitment to removing Harold from the throne of England by burning his ships upon arrival. Krushchev counter-threatened Kennedy with the statement that Soviet missiles would be fired automatically in the event of an armed conflict over Berlin. Escalation would be immediate.

CASE 10.3 Scheduling rivalry in film and television

Strategic rivalry is an important element in the programming and scheduling decisions made in the television and film industries. Television advertising revenue and film box office receipts can be heavily influenced by the programming and scheduling decisions made by competitors. Anticipating these decisions and formulating appropriate strategies in response is thus vital to the commercial success of a network or studio.

Programming is the real front line of network television. The people who control it are those who create, inspire or introduce everything we see on air. They are also the people who axe, destroy or shelve the programs that fail to rate with viewers. Top programmers include Fred Silverman, known as 'the man with the golden gut' for his instinctive understanding of what viewers wanted, and Brandon Tartikoff, who was recognised in the late 1980s and early 1990s as the key to NBC's $500 million in annual profits.

Programming schedules are usually closely guarded secrets. However, information about a rival's schedules can leak out, and many programs have well-known, regular time slots around which competitors can schedule. Peoplemeters installed in viewers' homes provide the networks with rapid feedback on the success or otherwise of their programming decisions, allowing them to revise their schedules if necessary. There is thus considerable scope for strategic rivalry in programming and scheduling.

Sometimes, programming decisions will seek to compete directly for total audience share. For example, a network may screen a Jean-Claude Van Damme film when its competitor is showing *Terminator 2* with Arnold Schwarzenegger, in an attempt to out-rate the rival network in that time slot, or simply to spoil their competitor's ratings.

Alternatively, programmers can bid for specific demographics within a given timeslot with a view to cornering that market. This in turn allows advertisers to better target that market, enhancing the network's advertising revenue. An example of this strategy is the Ten Network's decision to put *Beverly Hills 90210* up against Channel Nine's *60 Minutes* in the fiercely competitive 7:30 pm timeslot on Sunday nights. The result was the segmentation of the total audience, with the Ten Network taking the under 40s and Channel Nine retaining the over 40s. Thus, Ten goes 'young' when Nine goes 'old'. According to Mike Lattin, programmer for the Ten Network, 'it doesn't matter if they win the overall ratings—I still collect. . .80 per cent of Coca-Cola's television money. . .mainly because we provided teenagers (as viewers) consistently'.

Other strategies include 'smothering', which involves giving saturation coverage to a particular type of program to spoil the market for a rival's potentially high-rating program. For example, when Network Ten got the exclusive rights to *Diana: Her True Story* in 1993, Nine and Seven scheduled Princess Di specials in the weeks before so that by the time the Ten program was to be broadcast, potential audiences were 'royaled-out'.

The timing of programs can also be important. Although networks deny the practice, it is thought they will often start a program a few minutes late to lock in an audience for the night, by forcing them to miss the start of another program. Another common practice is to program across time slots, to disrupt a rival's programming. When Ten was launching its half-hour sitcom *Mad About You*, for example, Nine scheduled an hour-long special up against it.

A similar story plays itself out in the annual competition between film studios for box office receipts during the Thanksgiving to New Year period in the US. With as much as 25 per cent of the annual box office takings at stake in the six-week holiday season, the studios compete to get their films noticed. For example, in 1992, Columbia Pictures brought forward the release of *A Few Good Men* from December 18 to December 11. December 11 was the release date for a Fox film, *Hoffa*, which also starred Jack Nicholson. Fox was forced to back down and pushed back the release of its film until December 25. Fox Executive Vice-President Tom Sherak reasoned that 'if *A Few Good Men* is as strong as we think it'll be, we'll get a lot of publicity for our own very good Jack Nicholson film'.

Sources: B. Courtis, 'The strategies that rule television', *View*, 2 October – 9 October 1994; 'Yule Laugh, Yule Cry: Will Hollywood's Christmas stocking be chock-full of moviegoers?' *Business Week*, 2 November 1992.

Payoffs, outcomes and mixed strategies

Our advertising example exhibited a symmetric reward structure and payoffs ensuring that each firm would have a dominant strategy. One of the more interesting aspects of applying game theory is the linkage it brings to payoffs and outcomes and the non-existence of what are known as pure strategies. *Pure* *strategies* are those strategies that have clear actions based on the actions of rivals. For example, dominant strategies are pure strategies since they imply a constant action independent of the rival's strategy. An eye-for-an-eye is not a dominant strategy but is a pure strategy. *Mixed strategies* are based on random probabilities of taking actions. If I say that in 10 per cent of the cases I lower price but in 90 per cent of circumstances I keep price fixed, I am playing a mixed strategy. Let us examine a classic fowl-based example where mixed strategies are important: the *game of chicken*.

The game of chicken is a classic market entry/exit game and seems to be one being played by banks in Australia with respect to their overly expansive branch networks. Suppose that the payoffs from keeping a branch open or closing it in any one suburb are as given in figure 10.5. Bank A would be better off if bank B closed its branch and bank B would be better off if bank A exited the market. The problem with this set-up is that there are two solutions (shown in bold). One simple way of solving this would be for each bank to signal to the other which branches it will close. However, let's assume that signalling actions would be viewed negatively by the government.

How might the banks choose to solve their problem? At the margin, the banks should be indifferent to staying in a market or leaving. Therefore, if θ is the probability of staying in a market (and $1 - \theta$ the probability of leaving) then the following relationship must hold:

$$\text{Profits (staying in the market)} = \text{Profits (leaving the market)}$$

$$\theta \bullet (-3) + (1-\theta) \bullet (2) = \theta \bullet (0) + (1-\theta) \bullet (1) \quad => \quad \theta = 0.25$$

The implication is that the banks should roll a die where in 25 per cent of the cases they stay and in 75 per cent of the cases they leave. The end result is that they both stay in 6.25 per cent and both leave in 47.125 per cent of the markets. In the remaining 47.125 per cent of the markets one bank dominates. The expected value of such a strategy is 1.2167 and will be the best that can be done without direct co-operation.

This example begs a fundamental question, why don't the banks do this? One answer is that they may actually be doing this but that the probability of closing a branch is low. In the preceding example, the main force behind the high probability of closing a branch is the –3 payoff from both banks operating a branch with a reward of one if both close their branches. In reality, it may be that there is some reward, or at least a small penalty, from operating too many branches in the same suburb. A second explanation for the banks' unwillingness to randomly close branches is that they may not be sophisticated enough to develop the strategy. This changes the entire game from one where the strategy

Figure 10.5: The game of chicken and bank branches

		Bank A	
		Keep branch	Close branch
Bank B	Keep branch	-3, -3	**0, 2**
	Close branch	**2, 0**	1, 1

(Bank A, Bank B) payoffs

is complex but the payoffs and actions are known to one where the actions are unknown. For example, if ANZ is irrational and refuses to close its branches while Westpac dutifully follows the above strategy, Westpac would simply be handing ANZ money. Faced with an unsophisticated opponent, Westpac would have little choice but to accommodate its rival's lack of sophistication.[13]

Incomplete information

Our discussion has provided a means of thinking about competitive reaction but we still need to take this a step further and address the dynamic of competitive reaction when information is incomplete. Incomplete information implies that the structure of the payoffs and actions of the firms are imperfectly known. For example, suppose that you were bidding on a piece of artwork. You do not know the exact value of the painting, but have some imperfect estimate of its worth. All the other bidders also have their estimates, some of which are too high and others too low. If each bidder relies on the others to reveal their information by bidding, one of two results will arise depending on where the bidding starts. If the low bidders start first and exit early, the higher bidders will revise their estimates downwards lowering the final transaction price. If the high bidders start first and remain in the auction, the low bidders will tend to revise their estimates upwards. In either case, there is a high likelihood of a *winner's curse.*

The bidder with the most wildly outrageous estimate of the value will win the bidding at a price above a correct reflection of the market value. Winner's curses are common in situations where the item in question has some market value for which the bidders have imperfect estimates. Cases include asset acquisitions and takeovers, bidding for resource rights, and home purchases.

The complexity of developing strategies in an environment with incomplete information is exhibited through the illustration given in Case 10.4. Several key points come out of this example. First, it is rare that simple pure strategies arise in circumstances with incomplete information. Even completely informed rivals will react to the lack of information on the part of others by using probabilistic strategies. Second, deception appears to be the rule. Informed players will attempt to hide their knowledge in many cases. Case 10.4 uses the example of a litigant who, if guilty, will attempt to act innocent. This makes obvious sense. However, suppose the information was 'good' rather than 'bad' as might be the case for loan applicants who know they are a good credit risk. The constraining factor now becomes the fact that the bank simply cannot believe the applicants when they attempt to reveal their higher credit quality since their actions could simply be a deception being perpetrated by a bad credit risk. This leads to the third important characteristic of incomplete information, the *formation of conjectures* about the information of others. The choice of actions based on strategies will reveal information and it is important that rivals form conjectures that are consistent with that information. However, such conjectures will rarely be black and white, leaving the manager to accept the fact that, although correct on average, his/her decisions may appear incorrect when actually implemented.

Case 10.4 Incomplete information and litigation

Suppose that you (Jones) feel you have been defrauded in a business deal by Mr Smith. Although you feel you have been wronged you are uncertain whether or not the legal system will agree. However, you do know that in 50 per cent of these cases fraud has occurred. Mr Smith knows for sure whether or not he is guilty. The payoffs associated with various options are outlined in the table on the next page.

Mr Smith must come up with a strategy that entails deciding whether or not to settle the matter without going to court and, if choosing to settle the matter, what the magnitude of the settlement offer should be. Mr Jones must decide whether or not to accept any settlement offered by Mr Smith. The decision tree outlines the decisions to be made with their appropriate payoffs to the two parties.

It may appear that the choice facing the litigants is simple but that is hardly the case. Whether Smith makes a settlement offer and the magnitude of that offer will depend on whether or not he is guilty and Jones' belief about his guilt. Jones' actions will depend on his beliefs about Smith's innocence. How he forms this

Litigation game payoffs

Jury award if Smith guilty	$1,000,000
Jury award if Smith innocent	$0
Jones' legal fees if Smith innocent	$333,000
Jones' legal fees if Smith guilty	$100,000
Jones' legal fees if settlement reached	1/3 of settlement
Smith's legal fees with a trial and guilty	$100,000
Smith's legal fees otherwise	$0

belief is important to the outcome. For example, suppose that Jones believes that Smith has a 50 per cent chance of being guilty. After all this is the expected fraud rate. The expected payoff to Jones from going to court would be $283,333 = –$100,000•0.50 + $666,667•0.5.

Since the lawyers take one-third of any settlement, his decision rule should be to accept any offer above $425,000 (=$283,333/0.67). However, this strategy will not work. Suppose that Smith is guilty. Then any offer of less than $425,000 will cause him to end up in court which will cost him $1.1 million. He will, therefore, offer $425,000. If he is innocent any offer above $0 will cost him. He will, therefore, offer nothing. However, since any offer above $0 reveals Smith's guilt, Jones should reject that also. Given Smith knows this he will never choose to settle.

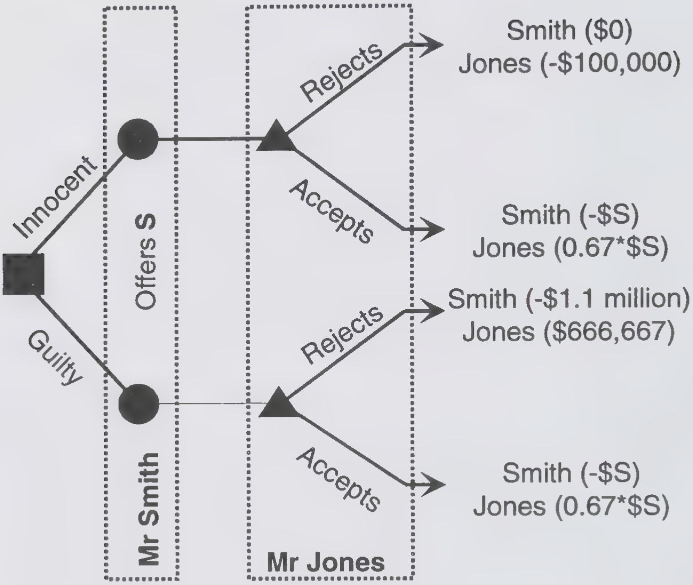
The problem with Mr Jones' naive belief of a 50 per cent chance of guilt is that it ignores the information that exists in the magnitude of the settlement. Mr Smith has three options:

Be honest.	Always offer $1,000,000 when guilty and $0 when innocent.
Be dishonest.	Always offer $0.
Be deceptive.	Always offer $0 when innocent. When guilty offer $0 with probability ρ and $1,000,000 with probability $(1 - \rho)$.

Without needlessly beating on the point, it should be clear that being honest or dishonest will not work, leaving Smith little choice but to be deceptive. In other words, the strategy 'be deceptive' dominates the other two strategies. However, if Smith is to be deceptive, Jones must also be deceptive choosing to drop the legal action offer with some probability, λ.

Jones would be indifferent to accepting or rejecting a settlement offer when $0 = –$100,000 + ($\rho/(1 + \rho)$)•$1,100,000. Smith should therefore offer to settle 15 per cent of the time. λ must be chosen such that, when Smith is guilty, he will be indifferent between offering $100,000 dollars (his legal costs) and

Decision tree for litigation payoff game


Innocent
Guilty
Offers S
Mr Smith
Rejects
Accepts
Rejects
Accepts
Mr Jones
Smith ($0)
Jones (-$100,000)
Smith (-$S)
Jones (0.67*$S)
Smith (-$1.1 million)
Jones ($666,667)
Smith (-$S)
Jones (0.67*$S)

Optimal decision rules for the litigation game

	Smith guilty	Smith innocent
Mr Smith	Offer $1,000,000 85% of the time. Offer $0, 15% of the time.	Always offer $0
Mr Jones	Accept any offer over $1,000,000. Reject any offer between $0 and $1,000,000 Accept $0, 9% of the time	

$1,000,000. His payoff when he offers $1,000,000 is –$1,000,000 while his payoff when he offers $0 is [$0•λ + $1,100,000•(1 – λ)]. Therefore, Smith would be indifferent to settling the case when $1,100,000•(1 – λ) = –$1,000,000 or λ= 0.09.

The strategies of the two litigants will be as shown in the table above. Three possible outcomes can arise. Smith can offer $1,000,000 and Jones will obviously accept it. Smith can offer $0 and Jones can accept or reject it. The case will go to court only if Jones rejects an offer of $0. Smith will offer $0, 57 per cent of the time and Jones will reject it in 91 per cent of the cases. Therefore, the probability of the case going to court is 0.57•0.91 = 0.52.

Source: Adapted from H. Bierman and L. Fernandez, *Game Theory with Economic Applications*, New York: Addison-Wesley, 1993.

Enforcing compliance—reacting to competitors' reactions

The major problem with most strategies is enforcing co-operation with rivals. As our prior examples have shown, this is driven by two factors: the uncertainty that exists in the marketplace and the self-interest of the rivals as defined by their payoff structures. In all markets, the key to successful strategic co-operation among rivals is the development of tacit or explicit co-operative mechanisms. We spoke earlier of credible threats as one form of tacit co-operative mechanism. Many other forms exist that we will subdivide into two types, *signals* and *institutions*. Signals are direct or indirect actions that indicate to a competitor your goals, intentions, motives, internal structure, payoffs or potential reactions. Institutions are physical or legal entities that are aimed at reducing the incentives towards competition.

Institutions are the most obvious and efficient means of enforcing co-operation and are also the most illegal unless sanctioned socially. For example, the clearest and most effective co-operative mechanism is a revenue pool. Revenue pools were used by American railroads in the late 1800s as a means of raising and fixing prices. The more modern variant is DeBeers' Central Selling Organisation. A revenue pool takes all the revenue associated with the participants' provision of an activity and divides it among the parties in predetermined shares. Revenue pools completely remove any incentive to cheat on a cartel since the cheater only gets its predetermined share no matter what it does. Revenue pools are *de facto* illegal in many countries but still exist in industries with sufficient political influence to be granted antitrust exemption. For example, American baseball, football, basketball and hockey all have revenue sharing arrangements which are weaker versions of the pure revenue pool. DeBeers, however, cannot even have an office in the United States since its CSO would lead to its being prosecuted by the Justice Department. Jewellers wishing to purchase raw diamonds must transact their business in Europe.

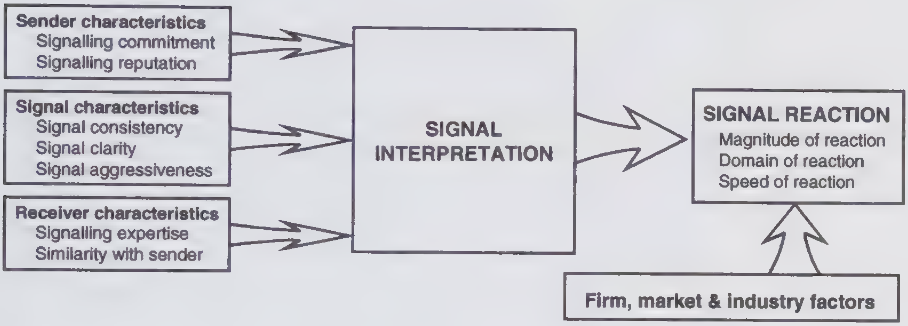
Co-operation driven by institutions is rare in most circumstances of day-to-day rivalry. Instead, companies attempt to co-operate by keeping their eyes and ears close to the ground in an effort to read the incoming signals sent by rivals. And just like tracking animals is subject to the vagaries of climate and terrain, numerous things muddy the information coming in to management. Signals can come in two varieties. First, information can be preannounced regarding specific actions or general dispositions. For example, airlines have routinely taken to signalling fare changes to competitors by preannouncing them over their reservation systems.[14] If the other airlines react positively (by changing their fares as expected), the fares remain as announced. If they react negatively, for example, by signalling even lower fares, the proposed fares are withdrawn and a second set of signals might be sent. Second, rivals can use actions to signal intentions to enforce specific actions on the part of their rivals. Our example of credible threats falls into this category. Perhaps the best example of such signal strategy is the tit-for-tat strategy popularised by Axelrod.[15]

Tit-for-tat is an evolutionary stable strategy (ESS) developed by Anatol Rappaport. An ESS is one that evolves over time and is adopted by all participants. Other ESS are the pacifistic strategy live-and-let-live and the Rambo strategy of kill-or-be-killed. Tit-for-tat is quite simple, I do to you tomorrow what you did to me today. An eye-for-an-eye is a tit-for-tat strategy. However, tit-for-tat possesses several other unique characteristics which make it quite robust. First, it is *nice.* It never initiates the bad option (e.g., attack). Second, it is *provokable.* It retaliates instantly, like for like. Third, it is *forgiving.* If the transgressor returns to a co-operative stance it will not take advantage of the change of heart. Tit-for-tat is an amazingly robust co-operative mechanism for one so simple. Axelrod has shown how it elicits co-operation in hosts of circumstances and generally dominates more aggressive non-co-operative strategies. However, it is not without its weak points and is not the holy grail of competitive co-operation. For example, it fails miserably in elimination tournaments since the player using it is killed off early. Also, in a world where defections from co-operation are random (or perceptions of defections are random) and frequent, two tit-for-tat players would be beating up on each other incessantly. Finally, if the players have complete knowledge, tit-for-tat will be dominated by known co-operative strategies. Overall, tit-for-tat's advantage is not that it is strong but that it works in a host of different environments. If you do not know the environment or the strategies and payoffs of the other players, tit-for-tat appears to work reasonably well at eliciting co-operation.

Signalling

Heil and Robertson[16] provide a synthesis of some of the main ideas pertaining to competitive market signalling (see figure 10.6). According to their theory, signal

Figure 10.6: A model of competitive signalling


Sender characteristics
Signalling commitment
Signalling reputation
Signal characteristics
Signal consistency
Signal clarity
Signal aggressiveness
Receiver characteristics
Signalling expertise
Similarity with sender
SIGNAL INTERPRETATION
SIGNAL REACTION
Magnitude of reaction
Domain of reaction
Speed of reaction
Firm, market & industry factors

Source: O. Heil and T. Robertson, 'Toward a theory of competitive market signaling: a research agenda', *Strategic Management Journal*, 12, September 1991, 403–18.

interpretation is driven by three factors, the sender's characteristics, the signal's characteristics, and the receiver's characteristics. However, the reaction to the signal is driven by a combination of the signal interpretation and the structural characteristics of the market and firm. The importance of signalling as a means of enforcing co-operation is highlighted by the case of the Anglo–Hanse trade wars given in Case 10.5.

The receiver's interpretation of the signal will be dependent on who sends the signal, what the signal looks like and who the receiver is. If we use a telecommunications analogy to simplify the arguments, we see that the clarity of a signal will be dependent on how loudly the caller talks and the quality of the caller's equipment. It will also depend on the lack of interference and the power and quality of the transmission equipment. Finally, the ability of the receiver to understand the signal will be dependent on the equipment of the receiver and the receiver's ability to understand the language of the sender. The receiver needs to know whether the call was intended for them and, if so, what the caller wants.

A sender with greater *commitment* and *reputation* will present a more believable signal. For example, Coles-Myer's signal of aggressive marketing associated with its Fly Buys program is quite strong because of the irrevocable nature of the commitment the program entails. Coles-Myer cannot simply wind down the program given the negative connotations of doing so. It must, therefore, push the program to its fullest. Reputation is an asset built up because of consistency of action over time. Ashton-Tate, the producer of the DBase database software program, suffered irreparable damage to its image after repeated delays in the release of its DBase IV product. This was a major determinant in Ashton-Tate's decision to merge with Borland in 1991. Lotus suffered similarly when it attempted to upgrade Lotus 123 in the face of severe competition from Microsoft Excel. On the other hand, Microsoft's announcement of its move into network architecture was quickly reacted to by Novell because of Microsoft's fearsome reputation of following through on its announcements.

Aggressive signals are those that have the most impact on the receiver. Airlines normally compete less aggressively in one another's main hubs choosing to battle over less entrenched and vital routes. Therefore, Delta Airlines could send a strong signal to American Airlines by dramatically lowering fares on flights through its main hubs in Dallas and Nashville, while a weak signal would be to cut fares on flights through New Orleans or Houston, where neither airline has a dominant position. In addition, *signals need to be consistent* since firms rarely rely on single signals in isolation. The same problem exists in business. The airline bankruptcies of the late 1980s led to a situation of tremendous inconsistency of behaviour as Continental, TWA, Eastern and Pan Am attempted to keep themselves afloat by alternately cutting costs, altering routes and pursuing short-term cash flow through price cuts. Their actions created an environment where more stable airlines were buffeted about in their attempt to predict industry trends.

Finally, the *clarity of the signal* will impact on how it is read. Normally, we expect senders to want their signals to imply clear actions. Rupert Murdoch's initiation of a UK newspaper price war in July 1993 was a clear signal of his commitment to increasing circulation. Although viewed as a crazy move by most analysts, Murdoch's commitment to the course was reinforced by his action, in June 1994, to reduce the price of the *Times of London* a further 10p to 20p.[17] However, vague signals can have value when the intent is to force competitors to use up time and effort interpreting the signal or to reveal their hand by reacting to the signal. Therefore, companies engage in vague announcements of market expansion or entry, product announcements or reorganisations that leave the market and rivals guessing.[18] Eliashberg, Robertson and Rymon[19] show that such 'bluffing' behaviour is quite consistent with this idea. They found that the bluffing of price increases was more likely when:

- entry barriers were high;
- the firm was strong in the product category;
- the signal was reversible; and
- the sender had superior information.

All signals need to be read and the characteristics of the receiver will have an important influence on the correct interpretation of the signal. The greater the *experience* of the receiver with the sender the greater is the likelihood that signals will be read correctly. This will be reinforced by the degree of *similarity* or *difference* between the signaller and receiver. This is one of the arguments for why the cold war created a stability that leaders in the post-cold war period yearn for. The opponents may have been armed to the teeth but they knew each other well. This is also one reason why the entry of new firms tends to lead to quite aggressive rivalry. Rarely do new entrants get driven from the market. Therefore, the only interpretation of the aggressiveness associated with new market entry is the fact that the competitors cannot come to some suitable market sharing arrangement. This can only be driven by their inability to communicate effectively and efficiently.

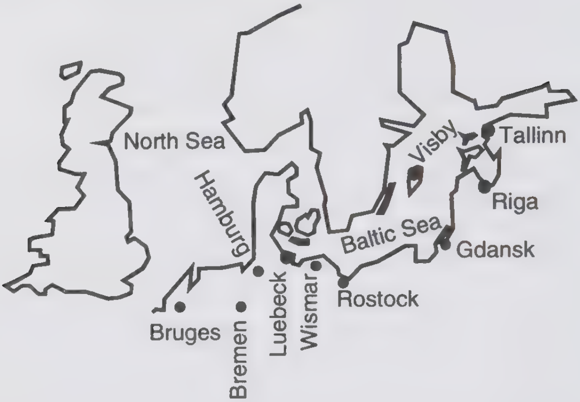
Reaction to a signal can come in two forms, either the receiver can react operatively and/or the receiver can send back a counter-signal. The counter-signal may be a request for more information, the proposition of an alternative course of action, or an attempt to signal a desire for cancellation or acceptance of the original signal. Reactions will vary based on their *magnitude*, their *domain* and their *speed*. Magnitude can be thought of as ranging from retaliatory (high magnitude) to appeasement (low magnitude) with a matching reaction being a neutral median. The reaction domain specifies where the reaction is aimed. For example, Gatignon, Anderson and Helsen[20] found that companies typically react to threats by putting effort into their most effective weapons. If your demand is highly sensitive to advertising and your rival lowers price, your best response is to increase advertising. However, if your demand is insensitive to advertising you have little choice but to react by also cutting price or, if your demand is not price sensitive, not reacting at all. Finally, the speed of the reaction will indicate its importance and itself serve as a signal. Although a quick counter-signal could indicate the level of interest or concern on the part of the receiver, it may also preclude the receiver from receiving additional information.

Case 10.5 The Anglo–Hanse trade wars, 1300–1700

The Anglo–Hanse trade wars illustrate how bilateral trade conflicts, driven by the inability to find an effective co-ordination mechanism, can result in a prisoners' dilemma. Both England and the Hanseatic League, a fluid confederation of up to 200 cities, sought to monopolise and tax certain northern European trade routes and thereby maximise their own economic welfare. In so doing, however, they lost the potential welfare gains from reciprocity in trade access and so both sides were left worse off.

Game theory suggests that with repeated plays of a game, the players will learn that higher payoffs can be achieved by following a co-operative strategy. These strategies evolve as players reward each other for co-operative behaviour and punish each other when they fail to cooperate. These strategies can evolve

Major cities of the Hanseatic League



into an evolutionary stable equilibrium in which both sides achieve their best possible outcome.

The Anglo–Hanse trade wars went on for several hundred years. England and the Hanse attempted, on numerous occasions, to negotiate treaties providing for reciprocity and mutual access in their trading arrangements. But these treaties repeatedly broke down, returning the two sides to the non-co-operative strategy with the reduced payoff.

There are at least five possible explanations of why a co-operative strategy failed to evolve. One possible explanation is a *lack of continuity*, whereby the trade wars are best seen as a series of separate, individual disputes rather than one continuous conflict. Yet the basic issue in the trade wars remained the same throughout this period, with a similar payoff structure.

A related possibility is that although the game remained the same, the players on both sides changed over time and failed to take account of the results of previous rounds of the contest. This hypothesis is difficult to confirm, since we do not have access to primary information about the decision-making processes of the players.

Co-operative strategies may have been hindered by a *distorted payoff structure* as a result of economic recession and the mistaken belief on the part of the English that predatory behaviour could force the Hanse out of the competition. The trade wars began during a major recession that was compounded by the plague and the Hundred Years War. The reduced value of trade meant that the income transfers effected by trade restrictions could only be maintained by even larger restrictions on a smaller volume of trade. Since most of the Hanse's income came from trade, the slump would have made it more belligerent. Similarly, a sharp decline in English tax revenues would have prompted a greater reliance on customs duties. The rapid oscillation from truce to unilateral defection, retaliation and back to co-operation reflected prevailing economic incentives. Recession not only increases the marginal gains from unrequited defection, but also increases the utility losses from mutual defection when the other party chooses to retaliate, and so increases the utility gains from returning to mutual co-operation.

The existence of high *transactions costs* worked against the evolution of co-operation. There was a lack of information on who to negotiate with. The bargaining process was time consuming and arduous, requiring several years to put together a negotiating party and send it to the other side. Commercial diplomacy and even written communication was expensive. Enforcing any agreements that were reached was difficult due to the weakness of central authority on both sides.

Decision-making processes on both sides were complicated by internal divisions and domestic rent seekers who sought to sway policy in their favour at the expense of other domestic interests as well as the opponents in the game. Though the English merchants, nobility and Crown all had the strategic objective of maximising their gains at the expense of the Hanse, they differed on specific questions of timing, tactics, or geographic areas in which to cooperate or defect. The 200 cities of the Hanse had even greater problems due to their large number.

Norms of retaliation failed to institutionalise any form of central co-ordination that would restrain the predatory inclinations of individual private actors. This resulted in a public bads problem (similar to a public goods problem). Reprisals were rarely directed against the original perpetrators of predatory acts. There was thus no incentive for individuals to abstain from predation, since the costs of retaliation were shifted onto others. This was conducive to the escalation of any conflict and worsened the effects of domestic rent seeking, although the English sought to internalise these costs by licensing privateers to carry out retaliation.

Rent seeking and norms of retaliation are the most likely explanation for the failure of the Anglo-Hanse trade wars to evolve into a mutually beneficial co-operative strategy. Many actors were in a position to unilaterally implement their individual priorities, even if this was non-conducive to the national interest. Individual acts of predation invoked retaliatory norms that led to an epidemic of retaliation and counter-retaliation, encouraging defection from co-operative strategies.

Source: Adapted from J. Conybeare, *Trade Wars: The Theory and Practice of International Commercial Rivalry*, New York: Columbia University Press, 1987.

Summary—rules for rivalry

Strategic rivalry is not warfare. Rather, it is the pursuit of co-operation in an environment hostile, both naturally and legally, to inter-firm co-operation and co-ordination. The development of strategies based on the competitive interaction of firms is not a simple task since the complexity and variance of the circumstances facing the different competing companies requires different and unique solutions. Dixit and Nalebuff[21] have come up with four rules aimed at simplifying the development of interactive strategy while attempting to maintain its inherent richness.

> Rule 1: *Think ahead and reason back.* To develop an appropriate and clear strategy it is important to understand the competitive interaction from beginning to end. Only by doing so can you account for competitors' actions and reactions and how they should drive your actions and reactions.
> Rule 2: *If you have a dominant strategy use it.* Thinking that you must react to a rival is sometimes as bad as ignoring a rival you should react to.
> Rule 3: *Eliminate any strategy clearly dominated by another strategy.* Some strategies will provide better results under all reasonable sets of circumstances.
> Rule 4: *Look for stability.* Having discerned the set of strategies that you and your rivals could rationally use, narrow the choices down to those which provide the most consistent stability. That is, avoid strategies where small changes in circumstances lead to dramatic changes in actions.

The search for co-operation is the search for understanding. First, there is the need to know who your rivals are. Once they are recognised, the task of eliciting co-operative behaviour is jointly based on you and your rivals' incentives and credibility. If the payoffs facing you and your rivals imply a win-win world, credibility will have little to do with co-operation since natural self-interest will do the job. However, if the payoffs imply a win-lose or lose-lose scenario, enforcing co-operation is a process that requires changing the incentives so that all or some of the market participants change their behaviour. This requires the building of credibility, either by one, all or some combination of firms, and the development of a signalling regime that provides a reasonable likelihood that your signals lead to the appropriate reactions by your rivals, and vice versa.

Chapter 11

The totality of corporate strategy

Success is a result, not a goal.

Gustav Flaubert (1821–1880)

We began this text by asking the question 'what is strategy?' We have purposely avoided addressing this question in the last eleven chapters, instead choosing to focus on the tools and theories that serve as the building blocks of corporate strategy. Part of the reason we have avoided this question is because of the difficulty there is in answering it with any degree of confidence. Faced with an unanswerable question a simple solution is to rephrase the question so you can answer it. Perhaps a better question to ask is, 'what makes a decision strategic?' There are four components that together make a decision strategic:

- The decision must be purposeful. It must have a goal.
- The decision must represent a substantive commitment of resources.
- The actions of others must be materially affected by the decision.
- The decision must be made contingent on the actions of other decision makers. A decision which is made in isolation of any impact or reaction of others is not strategic.

By the early 1980s, Xerox was falling behind in the copier race. Its success from 1960 until around 1975 had been sustained by its patent protection on its plain paper copying process. However, the loss of this patent protection plus the inroads made by Japanese companies at the low end of the market had seriously affected Xerox's performance. In 1982, David Kearns' took over the helm at Xerox and began pushing a quality program that would earn the company the Baldridge Award for Quality in 1989. Kearns' decision to go with his 'Leadership through Quality' program was a strategic decision driven by the impact of domestic and foreign competition. It was also purposeful. The goal was to regain Xerox's profitability through cost reductions and business process performance improvement. This appeared to be successful. In 1982, not a single Xerox machine was rated best in its class. By 1990, Xerox machines were rated best in all seven copier categories. The quality program also represented a substantive commitment of resources. Although the financial numbers associated with the quality program are unknown, rest assured that retraining all 100,000+ Xerox employees over a four-year period committed a substantial amount of the company's financial and human resources. Kearns considered it a 'bet the company' move. The actions of Xerox had a dramatic impact on the actions of other copier companies. Xerox's market share in all copier categories rose dramatically in the late 1980s and its profitability rose from the abyss.

Dissecting strategic business problems

Strategic decisions are the bringing to bear of the firm's asset structure, both tangible and intangible, to achieve a strategic goal and to further develop the company's asset structure. This may entail the application of the company's competencies and capabilities in some specific area, such as marketing or distribution, or the reorganisation of the firm's internal structure or product/market mix to more effectively deliver a product or service. We can, therefore, categorise strategic decisions as being of two main overlapping types:

- the application of assets to the achievement of goals; and
- the application of assets to the further development of assets.

Organisational constraints on strategy formulation

The two most critical constraints on internal strategy formulation are the organisation's embedded history and the incentives of its key stakeholders.

History and belief systems

The development of the firm's asset structure, and the capabilities and competencies that go with that structure, are dependent on the organisation's history and belief systems. This is sometimes called path dependence—the path that has got you to a point is important in determining where you are and where you will go. Belief systems are articulated through the values, norms and world-view of the firm's key executives. They are operationalised both directly, through planning processes, and indirectly, through subtle reinforcement by senior management.

Senior executives' views of their own strengths and those of their firm affect the options they consider. This is part of the filtering process mentioned in chapter 2 as a feature of the firm's culture. For example, a firm whose managers perceive themselves fundamentally as confectionery makers will not move far away from that line of activity. Any extensions of the firm are likely to be in ways that are seen as supporting its key skills. Expansion of the range and volume of confectionery produced, with perhaps vertical integration into distribution, are the most likely strategic possibilities to be considered. In contrast, a firm whose managers perceive company strength to be in distribution are likely to look for ways to broaden the product range they handle, whether they produce any, all or none of the merchandise. A firm whose senior executives regard it as having no specialist skill but a broad and general talent is far less restricted in the strategic options considered. Naturally, the success of strategies adopted depends on the degree to which these perceptions are well founded. Whatever their validity, they are a major influence on the strategic options considered.

This dependence on history and beliefs has both good and bad aspects to it. Xerox was one of the fastest growing companies in history, riding on the wave of its innovative 914 copier introduced in 1959. Xerox's original vision was to replace carbon paper as a method of copying important documents. Because the 914 was such a behemoth and costly to produce, Xerox executives came up with the idea of leasing the machine and charging a per copy price. These two ideas—a method of making copies of original important documents and leasing—were the mainstays of the Xerox culture during the 1960s. They were also the Achilles' heel of the company in the 1970s. During the 1970s, the Japanese made inroads into the copier market at the low-priced end, a market where sales, rather than leases were important. It took Xerox years to recognise this. Indeed it was not until 1986 when copier sales revenue finally exceeded leasing and service revenue. Also, during this period Kodak introduced a series of innovative machines with document feeders. Xerox's fanatical belief in protection of the original 'important' document, at all costs, virtually handed this section of the market to Kodak. Xerox's recent success has been achieved largely because of its ability to jettison its past.

Stakeholder conflict

If it is accepted that, for any firm, there are multiple stakeholders, each with goals for the firm, what guide to strategy formulation is provided? If the goals of all stakeholders were consistent with one another and with particular strategies there would be no problem. However, this is almost never the case. Frequently, even a single stakeholder will hold an inconsistent mix of goals for the firm. When we consider all stakeholders together, the inconsistencies are compounded and can have detrimental effects on the development and implementation of effective strategy.

Assuming that, as is usually the case, more than one stakeholder is in a position to affect the operations of the firm, it is necessary to find combinations of goals and strategies that satisfy key interests of those stakeholders. In other words, there must be trade-offs between the interests of the various parties and the strategies employed. Goal setting, strategy formulation and the implementation process are political activities in any organisation and need to be managed as a whole.

There are, however, various possible forms of political process. They do not all lead to the same outcomes and it is essential that senior executives manage a controlled political process for the firm. It is not enough that a degree of consistency be achieved between strategy and the goals of various stakeholders. The strategy must also be workable—it must also be consistent with the resources available to the firm, with the managerial characteristics of the firm and with the opportunities being presented in the business environment. Uncontrolled political processes cannot be guaranteed to produce strategies that are consistent with the needs of the firm in its particular situation. Unless management actively acts to ensure consistency, it is unlikely to exist.

Kearns' attempt to make Xerox a quality-driven company was not without its detractors. During its infancy, it ran into the entrenched financial accounting based culture that had grown up in Xerox since the arrival of a number of senior executives from Ford in the early 1970s. Its ultimate success was due to its backers' ability to line up strong support from a group of upper-middle level executives (known as the princes) as a means of impacting on the senior executives (the kings) who were lukewarm to hostile to the project. Even then, Kearns attributed some of the success of the quality program to management's lack of knowledge of what it was they were actually trying to achieve! Had they been informed completely it is unlikely they would have had the courage to proceed with the endeavour.

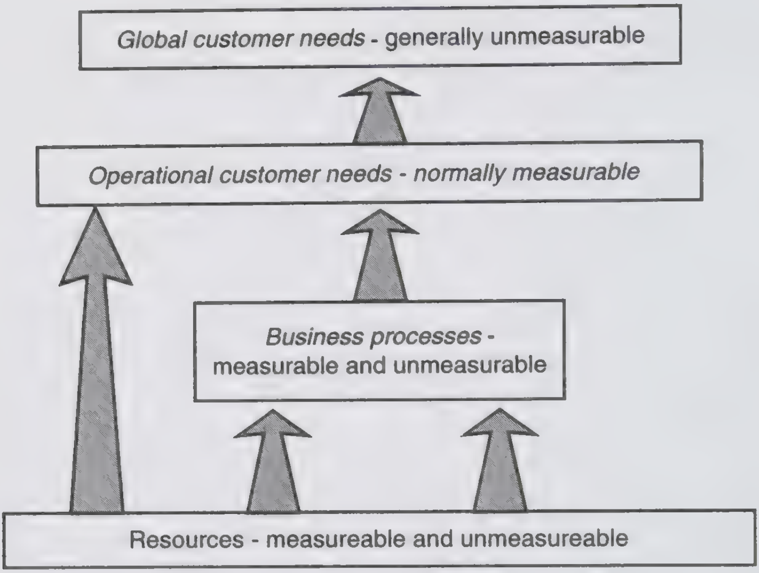
Understanding business process

The hallmark of a strategic decision is the ability to develop processes that allow the firm to capitalise customer value. Note that this differs from creating customer value. The litmus test of corporate success is the making of money. Capitalising customer value is the ability of the company to provide customers with a value proposition, a good or service, while making money in the process. This can be done either by providing the same level of value, but doing so at a lower cost or higher price, or providing more value and earning profits as a portion of the additional value.

Yet, a basic assumption of customer value creation is the knowledge of the linkage between a company's processes and customer needs. This was exemplified in chapter 4 with the example of Quality Function Deployment (QFD). However, the logic of QFD can be extended to all products and services. Figure 11.1 highlights how we can think about business process as the beginning of an understanding of the customer value. The key point to remember is that customers rarely purchase the processes that lead to the products and services they purchase. Indeed, they normally will care less about the intricacies of the business, being more concerned about their own vaguely-defined needs. However, for the corporation, it is the processes that matter since they actually define the product. The important point to understand is that the customer views the product or service as a set of values while the corporation views it as a set of processes. A link between the customers' operational values—values or needs that can be measured—and the business processes that meet those needs must be made for the company to effectively utilise its asset base.

The evolution of business processes and customer needs has been seen during the market evolution of the copier. Initially, the copier was a replacement for carbon paper and its value centred primarily on copy quality and speed, although neither was particularly good at the time. Customers were also quite tolerant of the complexity of the new machines and their insatiable demand for maintenance. Over time, customers' values evolved, leading to demands for sorting, document feeding, ever higher speeds, two-sided copying, colour copying capabilities and so on. The problem for the copier companies was devising the processes that matched their corporate capabilities to the needs and demands of the customers. Xerox's problems during the 1970s and early 1980s arose because of attacks on its business at two levels. From the low-end of the market Japanese competitors, such as Canon, Ricoh and Savin, focused heavily on the quality of their processes for creating value. At the top end of the market, Kodak stole Xerox's first-mover advantage by keeping more in tune with the developments customers wanted. Xerox failed because its customer value–business process link was non-existent. This, too, was driven by mistaken management beliefs about what customers should value as opposed to what they actually valued.

Figure 11.1: Matching resources and business processes to customer value


Global customer needs - generally unmeasurable
Operational customer needs - normally measurable
Business processes - measurable and unmeasurable
Resources - measureable and unmeasureable

Comparative and competitive advantage

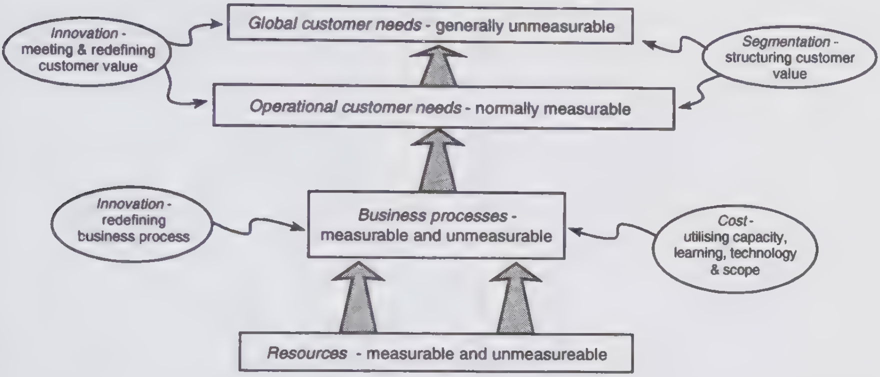
Having dissected the corporacion's business processes, the next task is looking for the long-run sources of sustainable advantage in those processes. In chapters 4 through 7, we concentrated on innovation, cost and segmentation as the sources of sustainable competitive advantage. There are some general lessons to be gleaned from this discussion:

- Sustainable advantages are based on non-imitable asset structures.
- Process advantages are generally more sustainable than product advantages.
- Advantages based on joint asset utilisation are more sustainable than advantages based on single assets.
- Competitive advantages can, when circumstances change, become competitive disadvantages.

Figure 11.2 replicates figure 11.1 and shows how the three drivers of competitive advantage can be applied to business processes.

Innovation can come in at two levels, redefining the processes that lead to customer value—process innovation—or working to better meet or redefine customer demand—product innovation. For years, Xerox viewed itself as a

Figure 11.2: **Innovation, segmentation and cost as sources of competitive advantage**


Innovation - meeting & redefining customer value
Global customer needs - generally unmeasurable
Segmentation - structuring customer value
Operational customer needs - normally measurable
Innovation - redefining business process
Business processes - measurable and unmeasurable
Cost - utilising capacity, learning, technology & scope
Resources - measurable and unmeasureable

company primarily defined by product innovation. It was only in the 1980s that it saw the light and began defining itself around its processes. In some sense, this was only natural. Its advantage during the 1960s was its unique product whose processes were protected by patents. When that protection disappeared, so did the distinctive nature of the Xerox product.

Sources of cost advantage are primarily process related although they will be affected by the choice of customers served. Cost structures are driven by a combination of volume, product mix and business and management technology. Xerox was primarily a high cost producer because it focused on the big machine market. This choice was reinforced by the erroneous belief that profitable customers would not make the cost-quality trade-off that so many of them were actually making when choosing to purchase the cheaper non-plain paper copiers.

Segmentation is associated with structuring customers based on their value demands. Customer segments can be defined in two ways. First, customers may all want the same basic thing, such as a car, but weight the attributes that define the best product differently. Second, customers may want distinctly different things. One customer may want to go to the opera and another customer to a football match. Again, much of Xerox's failure can be attributed to its lack of effective segmentation associated with its initial abandonment of the low end of the market, not recognising that such a segment was profitable if one was willing to meet the low quality demands of the customers.

Firm structure

A company's internal and external structure is based on the most proficient utilisation of its assets and the ability to effectively use the drivers of competitive advantage. The firm must have the capacity to actually manage the resource deployment, decision making and transformation activities required by a particular strategy. It must consider questions such as:

- Does the firm have the necessary resources or can it acquire them in time?
- Can it harness those resources in a congruent fashion?
- Can it move them to respond appropriately to actions of other firms and shifts within the environment? That is, is the asset structure flexible?

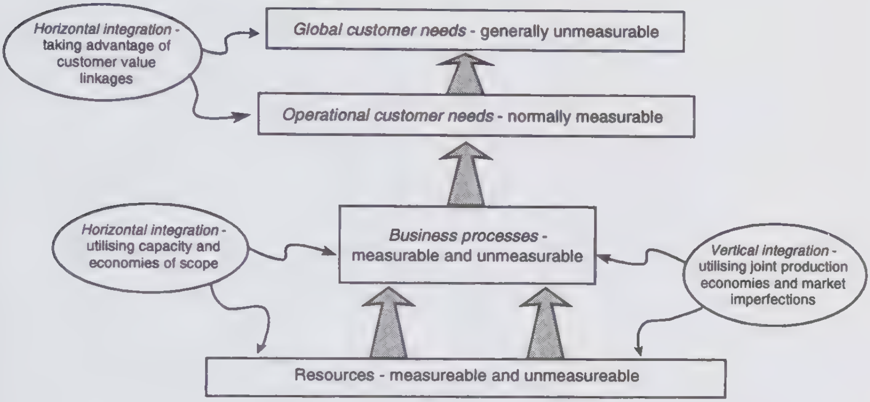
These are essentially issues of organisational control pertinent to strategy implementation and goal achievement and span both vertical and horizontal integration. They highlight the need for a match between the firm's goals, strategy and environment, and its structure, the technology employed, the expertise of its people, its ability to co-ordinate its assets, and the company's values and behavioural norms.

Most firms have some flexibility about these matters but, in the short term, it is quite limited. Major structural changes are easily made on paper but they wreak havoc with individuals' knowledge of how the organisation actually works. This detailed and very specific knowledge is a major resource that every organisation has vested in its existing structure. Likewise, a firm can train its people or recruit others with specific skills. But, if large numbers are involved, that is a lengthy and costly task. Should there be a need to change norms, that is, common patterns of behaviour within the organisation (for instance to get people to accept more responsibility), this also is difficult to accomplish. Unless the firm is subject to a crisis that is real and threatening to most members, norms change slowly.

The sources of competitive advantage represent the mechanisms that firms use to build their asset bases (see figure 11.3). Vertical and horizontal integration represent the firm's structure choices associated with matching its asset mix to the demands of its market. Vertical integration is the structuring of the linkage of business processes in the provision of goods and services. Rarely do we think about vertical integration having direct effects on customer value, although the indirect effects are enormous. Horizontal integration represents not only the structuring of the company around synergistic process relationships but also synergistic customer valuation relationships.

Firms have historically found the need to vertically integrate to control activities up and down the value chain. The industrial revolution was, among

Figure 11.3: Vertical and horizontal integration as sources of competitive advantage


Horizontal integration - taking advantage of customer value linkages
Global customer needs - generally unmeasurable
Operational customer needs - normally measurable
Horizontal integration - utilising capacity and economies of scope
Business processes - measurable and unmeasurable
Vertical integration - utilising joint production economies and market imperfections
Resources - measureable and unmeasureable

other things, a vertical revolution—a movement away from the decentralised artisan tradition towards the evolution of large corporations operating most activities associated with the final production of goods and services. The growing dominance of information technology is a de-integration revolution—a movement towards less control and more contractual co-operation. Firms have also found themselves changing their horizontal structure, focusing more on those activities and products that provide true productive efficiency and genuine customer value. This is, in part, driven by the growing sophistication of consumers and retailers along with the reduction in the proportion of customer value that comes from production linkages and direct managerial control of the entire product provision process.

Competitors

The core of corporate strategy lies at the intersection of the firm, its environment and its competitors. We have described strategy development in terms of acquiring, exploiting and maintaining competitive advantage through the development of a unique asset structure. Underlying this is the belief that in many business contexts, though not all, it is possible for some firms to gain an advantage over others that becomes part of the structure of the industry and is thus self-reinforcing. This advantage becomes the basis of an exceptional and consistent level of profitability.

However, the long-run pressures facing firms will generally erode these advantages. No firm, no matter how hallowed, has been able to sustain its advantage for more than a few generations. Today, corporate success is being

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measured in ever shorter increments as tried and true competitive barriers are quickly breached. The erosion of a firm's competitive position occurs because of changing environmental conditions that no longer favour the company, errors made by management, and persistent inroads made by rivals. For example, Xerox's success of the 1960s could not be sustained for exactly these reasons. Its loss of patent protection led to a redefinition of the environment in which it was operating. Its management made numerous errors by focusing exclusively on the top end of the market while ignoring the increasing evidence of Japanese inroads into its markets. The financially retentive 'gang of Ford' that ran the company in the 1970s removed the company ever further from its already weak market focus. Finally, American and Japanese competitors kept nibbling at Xerox's technological advantage. By the mid-1970s Xerox's market advantage was gone.

Understanding one's rivals is a two-stage process. First, you need to know who those rivals are and who could potentially become a rival. Second, not only is it important to know your rivals, you need to know the incentives facing them. This will help you in understanding their reactions to your behaviour and to changing environmental circumstances. One of Xerox's early mistakes was to focus on IBM as its main rival. Its fear of IBM's market clout became something of an obsession. In the meantime, Savin, Canon, Ricoh and Minolta built up capabilities that were far more threatening to the firm than anything IBM could have done. Xerox failed to recognise its rivals. Not knowing its rivals was a double sin since they could hardly understand the incentives of a competitor that they weren't really paying attention to anyway.

Perhaps the most important thing about competitive rivalry is the fact that corporate goals should be aimed at avoiding rivalry where possible and, when unavoidable, bringing to bear the corporation's assets in a manner that induces rivals to behave. To paraphrase Machiavelli, a strategist should never engage a rival 'unless he has an advantage over him, or he is compelled to act'.[1] Since it is rare for one company in oligopolistic competition to drive another firm out of business, we need to follow Clausewitz's dictum that 'war is an act of violence intended to compel our opponent to fulfil our will'.[2] Brought to our corporate context this can be translated as—*rivalry is a set of actions intended to compel our competitors to remain cooperative.* Failure to co-operate or to induce co-operation from rivals simply dooms the firm to a downward spiral of destructive competitive battles leading to little more than reduced profitability.

The role of strategic planning

If a strategy for competitive advantage is fundamental to corporate success, is a strategic planning system critical for the development of high performance strategies? Does good strategy depend on a smoothly operating formal system of planning? Do firms that have made a strong commitment to systems of strategic planning gain better strategy as a consequence?

The first chapters of this text omitted all mention of strategic planning systems. They treated, at length, the notion of competitive advantage, various bases of competitive advantage and explored some examples in depth. The fact that the bulk of this volume explores aspects of corporate strategy without introducing planning systems is neither oversight nor pedagogic device. It reflects the extent of separation we perceive between the two subjects. *Formal planning systems are neither essential to, nor a guarantee of, good strategy.*

The simplest of the major organisation-wide planning activities in most firms is the process that develops an annual budget. This process is usually a formalised sequence of events culminating in the budget. However, the budget process is normally not designed to develop strategy. There is a world of difference between a strategic planning system and a planning system that has a strategic effect. To the extent that any planning system leads to the long-term commitment of major organisational resources, it is a system with strategic effect. The commitments may be made without insight into the opportunities a firm has to create, maintain or lose competitive advantage. If so, the planning process is one of strategic effect but not one that develops good strategy.

Though plans and strategy are linked, they are not synonymous. A strategy entails at least broadly defined objectives for the firm, and an identified way in which the firm will seek to attain them. Irrespective of its level of detail, a strategy is, in fact, a plan. Yet it is not necessarily the outcome of a formal planning system. Indeed, the creativity and spontaneity of strategy formulation is difficult to accommodate within the routine and standardised processes of a formal planning system. We are particularly interested in those occasions when there is a fundamental shift of strategy, that is, when a new strategy is developed. This is a creative activity. As such, it is difficult to program. Yet, in addition to creativity, the strategies a firm seeks must have another critical characteristic, they must be made to work successfully. So the requirement is for both creativity and effectiveness. If the first of these is difficult to program, the combination is far harder to secure in a well scheduled and controlled process. Another constraint on the planning system as a source of good strategy is that strategic change frequently occurs as a consequence of some external stimuli. Such stimuli, and the recognition of them, are usually not conveniently synchronised with an organisation's formal planning schedule.

In the light of this relatively pessimistic view of strategic planning processes, are firms wasting their time and resources with formalised planning systems? This question is important, for planning systems of varying complexity are employed in most firms.

Remembering that strategy refers to long-term commitments, an annual budget has too short a perspective to be regarded as a strategic planning document. Certainly some of the expenditure anticipated in an annual budget, such as major capital works, may be for long term-commitments. However, the document does not map out even the medium-term consequences of those commitments, nor show the interrelated consequences of the entire set. Thus, it is frequently a plan with strategic consequences, without being a strategic plan. Recognising that limitation, many firms have sought to avoid it by establishing systems to develop and update plans of much longer duration. Five years is the period very commonly employed, although shorter and longer times are also used. So the response to the temporal limitation of the annual budget has been to project revenues and expenditures, investment decisions and market and contextual information over a longer period. There is no indication that this leads to any improvement in strategy development since it is little more than a bureaucratic accommodation to a fundamental limitation of strategic planning systems.

It is arguable that the planning horizon should relate to the nature of the business and, in particular, the life span of assets and the flexibility of response possible in the business. If, as is commonly the case with businesses employing major capital assets, such as refineries, mines, and power stations, the construction lead time is many years and the assets have long lives, then a lengthy planning horizon is appropriate. The same is true if training times are very lengthy. However, if the business is such that all resources necessary for any strategy can be quickly and effectively acquired and brought into operation, then a lengthy planning horizon is wasteful. In some cases, it may be appropriate to use quite different planning horizons for different aspects of the business. For instance, a department store chain might have a long lead time plan for the acquisition of retail sites, a shorter horizon for planning construction on those sites and an even shorter planning horizon for the marketing of products within the stores.

Some firms have instituted elaborate procedures to develop their plans. It is clear that in many instances they are intended to be strategic planning systems. On the basis of our earlier comments, we would expect most of them still to be planning systems with a strategic effect (which may be negative for the firm as well as positive) rather than strategic planning systems. Is there, then, no advantage to be gained from these systems?

In fact, as our subsequent discussion notes, these planning systems can perform valuable tasks for their firms, but not fundamentally in the development of strategy. Thus, we take the position that *corporate strategy may be assisted by formal strategic planning systems—effective strategy is rarely developed by them.*

Figure 11.4: The strategist and the strategic planning system

The strategic planning system	The strategist
Couple analysis and intuition	The finder of strategy The analyst of alternatives
The development of strategic programming Codification of strategy Elaboration of strategy Conversion of unbelievers	The catalyst
Communication of strategy and goals	The communicator

Source: Adapted from H. Mintzberg, *The Rise and Fall of Strategic Planning*, New York: Prentice-Hall, 1994.

The role of the strategist in the strategic planning system

Figure 11.4 outlines what Mintzberg considers to be the hallmark of an effective strategic system.[3] The strategic system can be considered as having two components, the strategist(s) and the strategic development process. Let us begin with a discussion of the role of the strategist.

What makes for a great strategist? Imagine a combination of Napoleon and Picasso; one the great tactician—an analyst of battlefields and effective at motivating troops; the other cantankerous but uniquely creative—having the ability to see things that others could not imagine but still being able to put them onto canvas in a manner that we all recognise as beautiful. In the two we see the first characteristic of the strategist, the ability to *couple analysis with intuition*. The strategist is, first, a finder of potential strategies. Second, the strategist is an analyst. Although analysis will, at times, lead to the discovery of potential strategies, it is very often the case that intuition gleaned from an imperfect synthesis of numerous analyses will be a more potent source of new strategic directions. Indeed, there are many people who argue that just as many good strategies have been destroyed by analysis as have been discovered by analysis. It is also true that finding a single individual in possession of both of these skills is rare. Hence the need for teams of people with mixtures of skills working in an environment that allows intuition to interact with analysis without one necessarily dominating the other.

The strategist must also be a great communicator. A formal planning system is valuable for communicating throughout the firm the intent and requirements of a strategy that has been determined, for anticipating and arranging resource and other requirements and for coordinating the activities of individuals and units. Yet the strategist must ultimately be responsible for persuading the unconverted that the strategy is sound and will be applied effectively in a way that benefits the doubters as well as the converted.

In a related vein, *the strategist must also be a catalyst.* Strategy is about change and change requires a match to be put to the gas jets. A catalyst is the person who takes ownership of the strategy and provides the spark for others to join in the party. Xerox's 'Leadership through Quality' program eventually won over its detractors because of David Kearns' ability to communicate the need for the program and to serve, ultimately, as the driving force behind its success. However, all was not smooth going. At one point, the executive put in charge of the program turned out to be exactly the kind of classic Xerox man that the program was meant to change. Needless to say, once the planners got hold of the mechanisms of change they became anything but instruments of change. Only by replacing this individual with the executive who had initially converted Kearns to the quality religion did the program have the kind of catalyst who would see the strategy through.

We noted earlier that strategic planning systems are not a source of strategic change but can help facilitate that change. In this sense, they provide the environment in which strategy is developed and can be anything from enriching to hostile. At one level they need to allow for the merger of analysis and intuition. In other words, the *strategic planning system should be the strategist's playground,* a place with rules but the opportunity to explore.

One of the most powerful contributions of a formal planning system is to educate managers through the development of *strategic programming.* It does this by codifying the strategy into simple language that guides management and worker thinking. It also elaborates the strategy in a manner that allows managers and workers to apply it to their jobs and tasks. Finally, education processes can be put into place that convert the unbelievers or the unknowing. Part and parcel with strategic programming is a communication program aimed at informing and reinforcing workers' application of the core strategy.

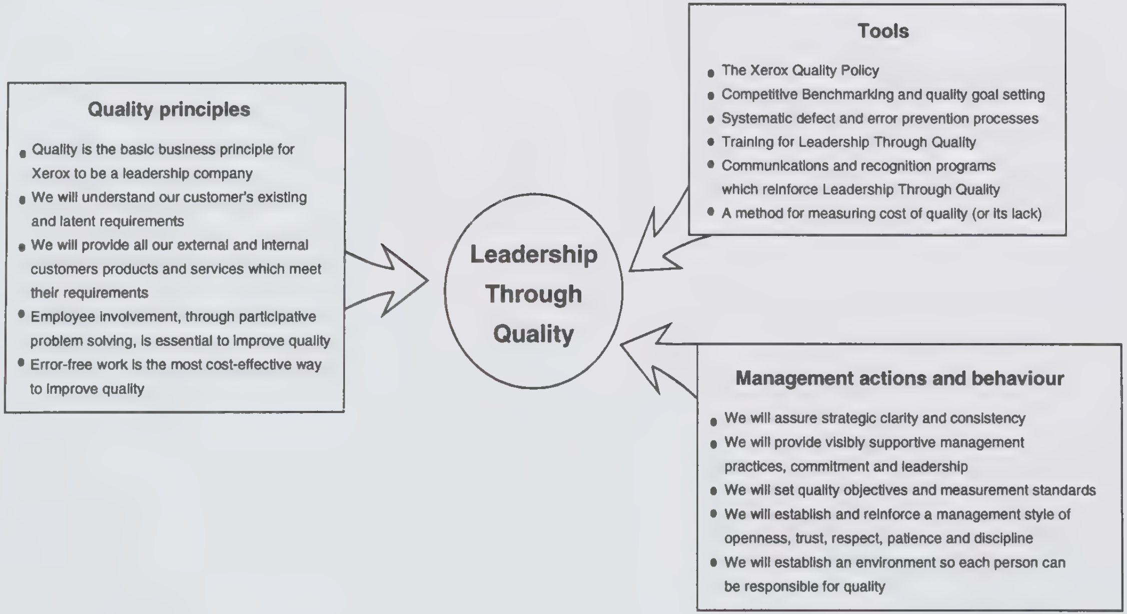
Behind the need for strategic programming is the fact that implementation of strategy depends on the commitment of major actors within the organisation. Obtaining that commitment commonly involves education and political activity. The resources of an organisation are almost never under the complete control of a single individual, even the chief executive. Usually there are many individuals with significant and interrelated personal power bases. Any major corporate strategy requires active co-operation drawing on the resources under the control of a number of individuals. It is quite possible for a strategy espoused by a chief executive to be destroyed by the passive resistance of subordinates. None of them is likely to oppose him overtly, yet, by refraining from using their discretion to solve the multitude of implementation problems that accompany any strategy, they can frustrate the chief executive's intention—and obviously that of any less senior executive. Consequently, support must be marshalled for any proposed strategy, so that those who have charge of its implementation will carry it diligently. Education and political action are usually essential to achieve that end. They may take a variety of forms: explanation and discussion, persuasion, acceptance of changes in order to accommodate the interests of others, exchanges of support on different issues, and a variety of other methods, some quite unattractive to many people.

Xerox's quality program is a classic example of a company developing a new strategic program. This was done in three ways. First, there was a very clear articulation of the strategic vision of the senior quality team. This is exhibited in figure 11.5. Second, employee involvement was brought on-line with a unique series of training programs that required all individuals who went through the training program to accept responsibility for training the next group. In other words, Xerox used professional quality experts only for the development of the program. All other training was done by the 'converted'. Finally, long-term commitment to the program was reinforced through a changing of the corporate culture to reinforce the importance of quality and customer focus in every aspect of the firm's operations.

Summary—the totality of corporate strategy

Corporate strategy is a mixture of art and science. In these chapters, we have provided you with the tools and the building blocks associated with the science of strategy while giving you an appreciation and understanding of the art of strategy. Yet even the scientific side of strategy hardly falls into the realm of 'rules and laws'. There are accepted ideas but even these are relatively young or recognised as riddled with holes. So what should you take away from all of this? First and foremost, you need to have a deep understanding of your firm, customers and actual and potential competitors. Without this basic capability, strategic development becomes little more than 'garbage in, garbage out'. Second, you need to recognise the linkages between business processes and customer value and what are your sources of competitive advantage. The matching of customer needs with business process is a necessary condition for successful operations and the building of competitive advantage is the only means to sustain that success. Third, you need to understand the sources of efficiency and inefficiency in your firm's structure. As we saw in the case of Sony Corporation's purchase of Columbia Pictures, even such hallowed firms as Sony

Figure 11.5: Holistic strategy development at Xerox



Quality principles

- Quality is the basic business principle for Xerox to be a leadership company
- We will understand our customer's existing and latent requirements
- We will provide all our external and internal customers products and services which meet their requirements
- Employee involvement, through participative problem solving, is essential to improve quality
- Error-free work is the most cost-effective way to improve quality

Leadership Through Quality

Tools

- The Xerox Quality Policy
- Competitive Benchmarking and quality goal setting
- Systematic defect and error prevention processes
- Training for Leadership Through Quality
- Communications and recognition programs which reinforce Leadership Through Quality
- A method for measuring cost of quality (or its lack)

Management actions and behaviour

- We will assure strategic clarity and consistency
- We will provide visibly supportive management practices, commitment and leadership
- We will set quality objectives and measurement standards
- We will establish and reinforce a management style of openness, trust, respect, patience and discipline
- We will establish an environment so each person can be responsible for quality

Source: Xerox Corporation

can make erroneous diversification decisions when they are based on a faulty understanding of the relationship between markets. Fourth, too many firms think of strategy development in terms of product and services and markets. Strategy development is a means to an end and one of its primary goals is the development and renewal of resources. The most effective strategies are long-term since they implicitly account for the intangible resource renewal character of strategy. Fifth, you need a clear understanding of the factors driving the behaviour of rivals. Strategy is not developed in a vacuum and a carefully crafted strategy must have at its centre a recognition of the importance of competitive interaction. Finally, strategy development is an internal political process as well as an intellectual academic exercise. Successful application of your strategy will be dependent on the ability to bring the firm's key stakeholders on board.

Endnotes

Chapter 1 The philosophy of corporate strategy

1 Both rules take a pre-eminent place in Sun Tzu, *The Art of War*, translated by Samuel Griffith, Oxford: Oxford University Press, 1963 and von Clausewitz, *On War*, translated by J. J. Graham, London: Penguin Books, 1982.

2 See W. Heitland, *The Roman Republic*, Volume 3, London: Cambridge University Press, 1909.

Chapter 2 Strategy and strategic decision making

1 G. Markus, 'Stability and change in political attitudes: observe, recall and "explain"', *Political Behavior*, 8, 1986.

2 An oligopoly exists when the market for some products is served by only a small member of sellers—but more than one. We can distinguish homogeneous oligopolies from differentiated oligopolies. In the first case, all the products offered by the sellers are identical as far as the buyers are concerned. Differentiated oligopoly exists when customers perceive differences of some significance in the products offered by rival sellers. These differences may reflect physical attributes, geographic location, extra services, subjective image or other features.

3 R. Caves, 'Industrial organization, corporate strategy and structure', *Journal of Economic Literature*, 18, 1980.

4 The economic concept of rent refers to those situations where a factor of production (land, capital, individuals, organised groups) is paid more than is actually necessary to draw it into productive activity. The difference between the amount paid and the minimum necessary is a rent. The existence of rent reflects scarcity of the factors concerned.

5 O. Williamson, *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: Free Press, 1975.

6 We will come across this notion of complete and incomplete contracts again and again. Complete contracts are those that account for every contingency that can arise with respect to the contract. Incomplete contracts are those where key contingencies cannot be outlined explicitly. In reality, all contracts are incomplete. However, as we will discuss later, the greater the number of contingencies that cannot be accounted for, the greater the implications for the nature of the strategic arrangement.

7 J. F. Hennart, 'A transaction costs theory of equity joint ventures', *Strategic Management Journal*, 9, July/August, 1988, 361–74.

8 As quoted in *Business Week*, 26 July 1976.

9 B. Wernerfelt, 'The resource based theory of the firm', *Strategic Management Journal*, 5, 2, 1984, 171–80.

10 Sun Tzu, *The Art of War*, translated by Samuel Griffith, Oxford: Oxford University Press, 1963; X 26.

11 von Clausewitz, *On War*, translated by J. J. Graham, London: Penguin Books, 1982; I.1.2.

12 Henderson's view is that strategy is about dominance of specific environments where a firm's dominant position in a niche is driven by the firm's unique adaptation to the environment and its early establishment of a position within the niche. See B. Henderson, 'The origin of strategy', *Harvard Business Review*, 67, 1989, 139–43.

13 M. Jensen, 'The eclipse of the public corporation', *Harvard Business Review*, 67, 1989, 61–74.

14 During the period of segregation in the United States, department stores had Black and White sections of the stores. In the late 1950s and early 1960s when segregation was collapsing in the South, many White store owners fought desegregation even though they held personal views that segregation was un-American. Their conflict was between their personal views (I think segregation is wrong) and their concern for the profitability of their stores (my White customers will leave if I desegregate). The problem was not the greedy profit maximising store owners (their goal), but the fact that Southern society was deeply divided as to the desirability of desegregation.

15 Sun Tzu, *The Art of War*, translated by Samuel Griffith, Oxford: Oxford University Press, 1963; IV 3 (based on the commentary of Mei Yao-Chi'en).

Chapter 3 Belief systems and culture

1 R. Hogarth, *Judgement and Choice*, Chichester: Wiley, 1987, 206–08.

2 See R. Dawes, *Rational Choice in an Uncertain World*, New York: Harcourt Brace Jovanovich, 1988 and D. Kahneman, P. Slovic and A. Tversky (eds.), *Judgement Under Uncertainty: Heuristics and Biases*, Cambridge: Cambridge University Press, 1982.

3 We will periodically bring up other areas where managerial decision making is biased when it is relevant to specific issues of strategy; e.g., in the case of learning from experience.

4 *Business Review Weekly*, 6 May 1996, 42.

5 R. Webb, 'Foster's clears the decks as BHP comes aboard', *Australian Financial Review*, 16 September 1992.

6 J. Russo and P. Schoemaker, *Decision Traps: The Ten Barriers to Brilliant Decision Making and How to Overcome Them*, New York: Simon and Schuster, 1989.

7 J. C. Spender, *Industry Recipes: The Nature and Sources of Managerial Judgement*, London: Basil Blackwell, 1989, 60–2.

8 R. Hall, 'The natural logic of management policy making: its implications for the survival of an organisation', *Management Science*, 30, 8, 1984, 905–27.

9 The biggest and most popular proponent of systems thinking is Peter Senge. See P. Senge, *The Fifth Discipline*, New York: Doubleday, 1990.

10 E. Nevis, 'Organizations as learning systems', in D. Ready (ed.), *In Charge of Change: Insights into Next-Generation Organizations*, Cambridge MA: ICEDR, 1995, 87–95.

11 *Business Review Weekly*, 6 May 1996, 42.

12 The term 'missing feedback' is taken from J. Russo and P. Schoemaker, *Decision Traps: The Ten Barriers to Brilliant Decision Making and How to Overcome Them*, New York: Simon and Schuster, 1989. They provide a similar example in chapter 9 of their book.

13 This information amounted to grades and other performance measures at the student's university. Almost every student who applied to this university ultimately attended another university. Attempts were made to adjust for difficulty of the curriculum.

14 G. Johnson, 'Managing strategic change: strategy, culture and action', *Long Range Planning*, 25, 1, 1992, 28–36. His is not the only structure used to describe corporate culture. The reader is referred to C. Hampden-Turner, *Creating Corporate Culture*, Reading MA: Addison-Wesley, 1990, for a description of some other models.

15 P. Gray and T. Roth, 'Celanese gets $2.72 billion bid from Hoechst', *Wall Street Journal*, 4 November 1986, 3+.

16 L. Schein, *A Manager's Guide to Corporate Culture*, Washington DC: The Conference Board, 1990.

17 H. Trice and J. Beyer, *The Cultures of Work Organisations*, Englewood Cliffs NJ: Prentice Hall, 1993.

18 N. Nonaka and H. Takeuchi, *The Knowledge Creating Company*, New York: Oxford University Press, 1995.

19 G. Hamel and C. Prahalad, 'Strategic intent', *Harvard Business Review*, 88, May/June, 1989, 63–76.

20 The reader is referred to G. Hamel and C. Prahalad, *Competing for the Future*, Cambridge MA: Harvard Business School Press, 1995.

Chapter 4 Corporate strategy in a nutshell

1 This definition needs to be modified slightly to account for the observation that some customers may be concerned about the processes a company uses to create the product when those processes reflect on the value being created. Mercedes-Benz will, in many commercials, present testimonials or images based on their engineers' activities. Food companies may talk about their use of organically grown ingredients. In each of these cases, the business process knowledge is relevant because it relates to the quality of the product as perceived by the customer. These examples do not, however, counter the basic point that customers are concerned about their value and not how you create it.

2 See H. W. Ebeling, Jr. and T. Doorley III, 'A strategic approach to acquisitions', *Journal of Business Strategy*, 3, Winter 1983, 44–54.

3 M. Porter, 'The value chain and competitive advantage', in *Competitive Advantage*, New York: Free Press, 1985, 33–61.

4 It is now generally accepted that the New Coke introduction (the formulation change debacle in 1985) was driven by a recognition that Pepsi's sweeter taste had a greater appeal for younger drinkers than Coke's more bitter formulation. New Coke was a direct attempt to counter this effect of demographics-driven trends.

5 For many companies, Australia's labour laws are a real competitive disadvantage. Mining and agricultural companies cannot move operations since they are physically immobile and therefore tied to local labour. It is interesting to note that because of this disadvantage these companies have some of the strongest incentives to invest in labour-saving and productivity-enhancing innovations and in operations overseas. Companies like BHP have judiciously used their reaction to a strategic disadvantage as a source of competitive strength.

6 It is important to note that there are many ways of measuring innovation and no one way appears to fully capture the concept. Many people view innovations simply as patents but clearly this is a very narrow conception of innovation. For example, in the United States, the computer industry accounts for over 20 per cent of all new products announced since 1975, however, it accounts for less than 5 per cent of all patents granted. See P. Chaney and T. Devinney, 'Who are the Innovators and What do They Gain?' unpublished manuscript, Australian Graduate School of Management, University of New South Wales, 1996.

7 PIMS stands for the Profit Impact of Marketing Strategies and is a database compiled and maintained by Strategic Planning Associates of Cambridge, MA.

8 G. Urban, T. Carter, S. Gaskin and Z. Mucha, 'Market share rewards to pioneering brands: an empirical analysis and strategic implications', *Management Science*, 32, June 1986, 645–59. The study represents an analysis of 129 brands in 34 consumer product categories.

9 P. Golder and G. Tellis, *Do Pioneers Really Have Long-Term Advantages? A Historical Analysis*, Marketing Science Institute, Report 92–124, 1992.

10 G. Carpenter and K. Nakamoto, 'Consumer preference formation and pioneering advantage', *Journal of Marketing Research*, 26 August 1989, 285–98.

11 G. Stalk and T. Hout, *Competing Against Time*, New York: Free Press, 1990.

12 Author estimates. The exact capacity and output figures are unavailable. The US and UK numbers are capacity figures taken from J. Womack et al, *The Machine That Changed the World*, New York: Rawson Associates, 1990.

13 This example is based on data from R. Sultan, *Pricing in the Electrical Oligopoly*, Cambridge MA: Harvard University Press, 1974.

14 You should note that the airlines' argument that business and first class service justifies the price differences does not hold up under real scrutiny (although antitrust and trade practices officials seem to consider it a justification). If this was the case, you would find airlines offering discounted business and first class seats to passengers willing to precommit to a schedule in advance (e.g., a 21-day advance purchase). However, no airline does this. Essentially, all airlines fill the plane up from the back with first class picking off those who either have enormous valuations for keeping away from the common folk or those absolutely needing to be on a specific flight and no other seats are available.

15 If we take this to a European context we find a slightly different set of circumstances. Business class within Europe on many European airlines can be characterised as economy with napkins. Space and comfort are meaningless with business class being little more than a mechanism to force late booking fliers to pay a higher price. The seats are economy sized seats and few additional amenities are provided. Therefore, the second factor becomes meaningless and 'class' in this market becomes a pure price discrimination mechanism sustained by the anti-competitive nature of the European airline industry.

16 A quasi-monopoly recognises that a firm has monopoly power within its sub-market but that customers could move to another market. Take an airline that controls all the flights between two cities. If an aeroplane were the only means of travel between the two cities, the airline would charge a monopoly price of $500. However, because you could travel by car between the two cities in eight hours, potential customers have an option. The end result is that the airline charges a price of $375 as a way of inducing some people to fly rather than drive. The 'driving' market constrains the power of the monopolist.

17 Note the importance of EOS in the formation of niches. The best niche is one where the demand is equal to your range of efficient production (from the unit cost curve). Under these circumstances, you have a natural monopoly in the niche. There is room for one, and only one, low cost producer.

18 This example is a variant of one found in G. Urban and K. Starr, *Competitive Marketing Strategy*, New York: Prentice Hall, 1991.

19 Sun Tzu, *The Art of War*, translated by Samuel Griffith, Oxford: Oxford University Press, 1963; IV 4.

20 This is a variant of the small numbers contracting problem (see chapter 2).

21 The issue of what constitutes a 'related' business is quite contentious. For our purposes, a related business is one for which there are demand and/or cost interrelations between the lines of business. Using this definition, we would expect to see decisions made for one business having profit and cash flow effects on its related-business neighbours.

22 R. Rumelt, 'Diversification strategy and performance', *Strategic Management Journal*, 3, 1982, 359–69.

Chapter 5 Achieving competitive advantage through strategic innovation

1 The definition of a new or improved product was a product or improvement of less than three years duration. Bureau of Industry Economics, *R&D, Innovation and Competitiveness: An Evaluation of the R&D Tax Concession*, Research Report No. 50, Canberra: AGPS, 1993.

2 A. Page, 'Assessing new product development practices and performance: establishing crucial norms', *Journal of Product Innovation Management*, 10, September, 273–90.

3 This definition is sufficiently broad to cover most traditional definitions of innovation. Schumpeter defines an innovation as any of the following: (1) the introduction of a new good, (2) the introduction of a new method of production, (3) the opening of a new market, (4) the conquest of a new source of supply and (5) the carrying out of a new organisation of industry (*The Theory of Economic Development*, Cambridge MA: Harvard University Press, 1934).

4 According to Schumpeter, '[i]nnovations in the economic system do not as a rule take place in such a way that first new wants arise spontaneously in consumers and then the productive apparatus swings round through the pressure . . . It is the producer who as a rule initiates economic change, and consumers are educated by him if necessary; they are, as it were, taught to want new things, or things which differ in some respect or other from those they have been in the habit of using' (*The Theory of Economic Development*, Cambridge MA: Harvard University Press, 1934).

5 Both this and the next example are based on a study conducted by the Innovation Study Commission of the Business Council of Australia. R. Carnegie and M. Butlin, *Managing the Innovating Enterprise*, Melbourne: The Business Library, 1993.

6 The development of new attributes also represents product differentiation. However, for the purposes of our discussion we will speak of this more radical form of differentiation as a separate type of innovation.

7 In marketing jargon, the competition between the products represented on the spectrum would be what is known as direct competition. The competition from related product categories (e.g., the sponge) is known as indirect competition.

8 In a classic study, Zvi Griliches showed that traditional price indices, such as consumer price indices, are biased because of their inability to account for quality as well as quantity and price. Griliches was responsible for the development of our current thinking about products as bundles of attributes, each attribute possessing its own unique price and quality. The final price of a product is made up of the sum of the attribute prices (known as hedonic prices) and the quantities of the attributes making up the product. See Z. Griliches, 'Hedonic price indexes for automobiles: an econometric analysis of quality change', in *Price Statistics of the Federal Government*, New York: NBER, 1961 and Z. Griliches (ed.), *Price Indexes and Quality Changes*, Cambridge MA: Harvard University Press, 1971.

9 The Bureau of Industry Economics found that, in 1992, Boards of Directors were spending approximately 19% of their time discussing innovation-related issues. The comparable figure found by Invetech in 1987 was around 10%.

10 T. Devinney, 'How innovation finds an end to a means . . . and why Australia has lost its way', *Australian Financial Review*, 21 July 1995, 40+.

11 P. Chaney and T. Devinney, 'Who are the innovators and what do they gain?', unpublished manuscript, Australian Graduate School of Management, University of New South Wales, 1996.

12 D. Teece, *The Multinational Corporation and the Resource Cost of International Technology Transfer*, Cambridge MA: Ballinger, 1976; H. Itami and T. Roehl, *Invisible Assets*, Cambridge MA: Harvard University Press, 1987.

13 A. Bhide, 'How entrepreneurs craft strategies that work', *Harvard Business Review*, 94, March/April, 1994, 150–61.

14 D. Grady, et al, *Unlocking Innovation: Challenging Conventional Wisdom About What Leaders Do*, Sydney: McKinsey and Co., 1993, 11–20.

15 K. Clark, S. Wheelwright and R. Hayes, *Dynamic Manufacturing: Creating the Learning Organisation*, New York: Free Press, 1988.

16 A. Page, 'Assessing new product development practices and performance: establishing crucial norms', *Journal of Product Innovation Management*, 10, September, 273–90.

17 B. Henderson, 'The origin of strategy', *Harvard Business Review*, 67, Nov/Dec 1989, 139–43.

18 G. Hamel and C. Prahalad, 'The core competence of the corporation', *Harvard Business Review*, 68, 1990, 79–87.

19 G. Stalk, 'Competing on capabilities', *Harvard Business Review*, 70, March/April 1992, 57–69.

20 M. Tushman and P. Anderson, 'Technological discontinuities and organisational environments', *Administrative Science Quarterly*, 31, 439–65.

21 E. Hobsbawm, *Industry and Empire from 1750 to the Present Day*, Harmondsworth: Penguin, 1969, 40.

22 W. Baumol, 'Entrepreneurship: productive, unproductive and destructive', *Journal of Political Economy*, 90, 5 pt. 1, 1990, 893–921.

23 Office of the Chief Economist, Securities and Exchange Commission, *The Effects of Poison Pills on the Wealth of Target Shareholders*, Washington DC, 1986.

24 It is quite interesting to note how computer companies have attempted to negate these switching costs by making hardware and software compatible. Today, almost all major programs read data and commands in foreign formats, allowing consumers to switch software packages without losing their earlier work. In the case of hardware, software (and, increasingly, the hardware itself) has been developed to emulate alternative architectures. It is generally the smaller companies that work to make their products more compatible with larger companies' standards. So programs like Apple File Exchange were more likely to be developed so that DOS users could switch to using a Macintosh.

25 W. Robinson and C. Fornell, 'Sources of pioneer advantages in consumer goods industries', *Journal of Marketing Research*, 22, August 1985, 305–17.

26 Brian Arthur explores this problem of network effects, and the lock-in that may result. He points out that in some cases we may find a whole economic system locking in to what turns out to be an inferior technology. Yet every user is rational in their decision to purchase the less desirable technology, if it has become the accepted standard (W. Arthur, 'Positive feedbacks in the economy', *Scientific American*, 265, February 1990, 80–85; W. Arthur, 'Why do things become more complex', *Scientific American*, 268, May 1993, 144).

27 W. Robinson, C. Fornell and M. Sullivan, 'Are market pioneers intrinsically stronger than later entrants?' *Strategic Management Journal*, 13, 1992, 609–24.

28 Survivorship bias occurs because we do not have a complete picture of the world and it is biased towards only those firms who have survived long enough to be studied. This is a serious problem in strategy since almost all of our research relies on a continuous source of data that only firms still in business can provide.

29 P. Chaney, T. Devinney and R. Winer, 'The market value of new product introductions', *Journal of Business*, 64, October 1991, 573–610; P. Chaney and T. Devinney, 'New product innovations and stock price performance', *Journal of Business, Finance and Accounting*, 19, September 1992, 677–95.

30 The numbers in the tables 5.2 and 5.3 present changes for firms between 1989 and 1992. Bureau of Industry Economics, *R&D, Innovation and Competitiveness: An Evaluation of the R&D Tax Concession*, Research Report No. 50, Canberra: AGPS, 1993.

31 I. Magaziner and M. Patinkin, *The Silent War*, New York: Random House, 1989.

32 See W. Mitchell, 'Dual Clocks', *Strategic Management Journal*, 12, February 1991, 85–100.

33 See D. Gobeli and W. Rudelius, 'Managing innovation: lessons from the cardiac-pacing industry', *Sloan Management Review*, 26, Summer, 1985, 29–44 and C. Banbury and W. Mitchell, 'The effect of introducing important incremental innovations on market share and business survival', *Strategic Management Journal*, 16, 1995, 161–82.

34 See G. Stalk and A Webber, 'Japan's dark side of time', *Harvard Business Review*, 71, July/August, 93–102, and M. Keller, 'Choking on complexity', *Automotive Industries*, 173, April 1993, 13.

35P. Romer, 'Ideas and things', *Supplement to the Economist: 150 Economist Years*, 11 September 1993, 64–8.

Chapter 6 Capacity and cost position

1 C. Shifrin, 'British Airways applies profitability formula', *Aviation Week & Space Technology*, 31 May 1993, 90–1. C. Shifrin, 'British Airways' profit grows 26.5%', *Aviation Week & Space Technology*, 22 November 1993, 30–1.

2 For a discussion, see G. Stalk, P. Evans and L. Shulman, 'Competing on capabilities: the new rules of corporate strategy', *Harvard Business Review*, March/April 1992, 57–69.

3 McKinsey & Company, *Emerging Exporters*, Melbourne: Australian Manufacturing Council, 1993.

4 For a fuller discussion, see P. Adler and K. Clark, 'Behind the learning curve: a sketch of the learning process', *Management Science*, 37, March 1991, 267–81.

5 B. Levitt and J. March, 'Organizational learning', *Annual Review of Sociology*, 14, 1988, 319–40.

6 T. Devinney, 'Entry and learning', *Management Science*, 33, June 1987, 706–24.

7 P. Adler, 'Shared learning', *Management Science*, 36, August 1990, 938–57.

8 A. Dick, 'Learning by doing and dumping in the semiconductor industry',

Journal of Law and Economics, 34, April 1991, 133–59.

9 H. Gruber, 'The learning curve in the production of semiconductor memory chips', *Applied Economics*, 24, August 1992, 885–94.

10 G. Stalk, 'Japan's dark side of time', *Harvard Business Review*, 71, July/August 1991, 93–102.

Chapter 7 Strategic market segmentation

* This chapter was co-written with Grahame R. Dowling.

1 A. Rowe, R. Mason and K. Dickel, *Strategic Management: A Methodological Approach*, Reading MA: Addison-Wesley, 1993.

2 STP is a term originally coined by Philip Kotler. The way it is implemented here, however, is somewhat different to Kotler's original formulation. P. Kotler, *Marketing Management*, Englewood Cliffs NJ: Prentice-Hall, 1994.

3 This 3C approach was first suggested to the authors by Professor Gary Lilien.

4 See, for example, 'Special section: market segmentation research', *Journal of Marketing Research*, 15, August, 1978, 315–412.

5 P. Dickson, 'Person-situation: segmentation's missing link', *Journal of Marketing*, 46, Fall, 1982, 56–64.

6 G. Eppen, W. Hanson, and R. Martin, 'Bundling: new products, new markets, low risk', *Sloan Management Review*, 32, Summer, 1991, 7–14.

7 P. Arbie, J. Carroll, W. DeSarbo and Y. Wind, 'Overlapping clustering: a new method for product positioning', *Journal of Marketing Research*, 18, August, 1981, 310–17. M. Wedel and J. B. Steenkamp, 'A clusterwise regression method for simultaneous fuzzy market structuring and benefit segmentation', *Journal of Marketing Research*, 28, November, 1991, 385–96.

8 G. Dowling and D. Midgley, 'Identifying the coarse and fine structure of market segments', *Decision Sciences*, 19, Fall, 1988, 830–47.

9 To form operationally reliable and robust market segments takes a combination of strategic judgement and statistical analysis skills. Hence, an expert (a tame academic or a good market research firm) is generally required to help develop the segmentation scheme. Further examples of the issues involved in this type of segmentation can be found in G. Dowling, G. Lilien and P. Soni, 'Development and testing of a normative procedure for business market segmentation', *Journal of Business-to-Business Marketing*, 1, 1993, 31–62, and V. Rangan, R. Moriarty and G. Swartz, 'Segmenting customers in mature industrial markets, *Journal of Marketing*, 56, October, 1992, 72–82.

10 T. Robertson and H. Barich, 'A successful approach to segmenting industrial markets', *Planning Review*, 20, November/December, 1992, 5–11+.

11 D. Gensch, N. Aversa and S. Moore, 'A choice modeling market information system that enabled ABB electric to expand its market share', *Interfaces*, 20, January/ February 1990, 6–25.

12 M. Porter, *Competitive Strategy: Techniques for Analysing Industries and Competitors*, New York: The Free Press, 1980.

13 P. Kotler, *Marketing Management*, Englewood Cliffs NJ: Prentice-Hall, 1994, 284.

14 This is not a pure diversification argument like we find in finance. Firms exist because of the interrelationships that exist between products and processes. This implies that firms seek to jointly produce products that have these synergies since the return is higher. However, because the cash flows tend to be correlated when synergies exist, the search for synergies can increase risk (the firm's beta). The best of all possible worlds (and a rare event) is when synergies exist (the products have a reason to be produced together) but cash flows still exhibit a negative correlation. In the segmentation case, such circumstances can arise more readily than we normally expect. For example, one segment could be counter-cyclic (demand, and cash flow, declines with the business cycle) and another pro-cyclic (demand, and cash flow, rises with the business cycle). The company gets the advantage of the synergy associated with production, while having diversified over the business cycle. See, T. Devinney and D. Stewart, 'Rethinking the Product Portfolio: a generalised investment model', *Management Science*, 34, September 1988, 1080–95.

15 P. Dickson and J. Ginter, 'Market segmentation, product differentiation, and marketing strategy', *Journal of Marketing*, 51, April 1987, 1–10.

16 P. Kotler, *Marketing Management*, Englewood Cliffs NJ: Prentice-Hall, 1994, 285–6.

17 G. Dowling, *Corporate Reputations*, Melbourne: Longman Cheshire, 1994, chapter 10.

18 J. Rossiter and L. Percy, *Advertising & Promotion Management*, New York: McGraw-Hill, 1987, 183–5.

19 A. Ries and J. Trout, *Positioning: The Battle for Your Mind*, New York: McGraw-Hill, 1986.

Chapter 8 The strategic gains from vertical integration

1 There is a chicken and egg problem here. We are implying that horizontal and vertical integration tend to be simultaneously determined. In many cases, it is impossible to determine the direction of causality; i.e., whether VI drove HI or HI drove VI.

2 Allegis is an amazing example of how fast a strategy can be changed. In February 1987, United CEO Richard Ferris announced a change in strategy at United. The company was to become a full-service provider of travel services. Hertz and Westin Hotels were purchased, stock was issued for the purchase of Hilton and Ferris proposed spending $7 million implementing United's name

change. Viewing the company as significantly undervalued, Coniston Partners began purchasing United stock in March of 1987. In May 1987, Ferris announced a recapitalisation plan that involved giving Boeing $700 million in convertible notes that amounted to around 16 per cent of the company. Coniston moved to protect its position. Within 10 days Ferris was gone and, within months, so were the holdings in Hilton, Hertz and Westin Hotels.

3 Norman and Ramirez, to some extent, touch on this inability to define a clear value chain in many of today's corporations. They coin the term 'value constellation' as a way of trying to conceptualise the fact that the value created by the modern corporation can be distinctly non-linear. Rather than thinking of incremental value as being created along a chain of activities, they prefer to think of potential value being like a constellation of activities where various economic actors (e.g., distributors, suppliers and customers) choose to create their own value through picking the combination of activities most conducive to their needs and demands. We will come back to discuss this idea in chapter 9. R. Normann and R. Ramirez, 'From value chain to value constellation: designing interactive strategy', *Harvard Business Review*, 71, July/August 1993, 65–77.

4 You should recognise this as our definition of economies of scope from chapters 4 and 6.

5 R. Johnston and P. Lawrence, 'Beyond vertical integration—the rise of the value-adding partnership', *Harvard Business Review*, 66, July/August, 1988, 94–101.

6 It is useful to repeat our definition of a public good. A public good exists when there is a large fixed cost of producing an item but once it is produced the marginal cost of making it available to additional users is very low (normally assumed to be close to zero). Under these circumstances, no producer has an incentive to make the public good since it could never recoup its costs by pricing it on the open market. The only way to solve the public good problem is to internalise the production and usage of the good so that there is some way of recouping the initial fixed cost. Information is a classic case of a public good because its acquisition cost is high but it can be easily transferred between individuals.

7 The first case is a classic agency problem. It is possible that, with sufficient monitoring, the transaction could be made complete. Since monitoring is costly and inaccurate, such a solution ends up being second- or third-best. However, even such a second- or third-best alternative may be less costly than complete integration. The second case revolves around the parties' beliefs about the appropriate returns to the assets they are bringing to the arrangement. Since these assets may not have market equivalents, finding their appropriate values can be mere speculation and subject to intense and constant renegotiation.

8 T. Devinney and M. Flannery, 'The bank–customer relationship', in W. R. Heilmann (ed.), *Geld, Banken und Versicherungen*, Karlsruhe: VVW, 1988.

9 J. Stuckey and D. White, 'When and when *not* to vertically integrate', *Sloan Management Review*, 34, Spring, 1993, 71–83.

10 There is some logic as to why chemical concerns would want to merge some operations with drug companies. There is less rationale for the recent move by some chemical companies into the biotechnology industry. What appears to be occurring is a sequence of events that look logical in sequence but not when viewed holistically. Chemical companies integrate vertically into drugs to take advantage of their capabilities in chemicals. Drug companies integrate horizontally into biotechnology to take advantage of their know-how. In an attempt to remain competitive (at least in their own minds), the chemical/drug companies also integrate horizontally into biotechnology. Unfortunately, the link between the capabilities of the core chemical concern and biotechnology developments is tenuous.

11 K. Harrigan, *Strategies for Vertical Integration*, Lexington MA: Lexington Books, 1983.

12 Brown Shoe Company *vs* United States, 370 US 294, 82 S.Ct. 1502, 8 L.Ed.2d 510, 1962.

13 This situation also leads to a curious end result. The actions of the first firm attempting to preclude competition through VI has forced all other firms to act in kind. The end result is a series of inefficient retail operations that all the companies would like to do away with and make more efficient. Unfortunately, since the companies cannot simply go back to the independent retailers (there are none left), the only alternative is to somehow increase scale to get the retail operations back to efficient levels. This can be done in two ways — either sell the competition's products or make more of their own products (e.g., by expanding their product line). If competitors are myopic, they will refuse to sell each other their products which means that all firms will increase production, leading to over-capacity in production and a situation worse than before the integration occurred. If the competitors are rational, they will sell their products to each other's retail outlets leading to a situation identical to the one that existed before the vertical integration wave took place!

14 J. McGee, 'Predatory price cutting: the Standard Oil Co. (N.J.) case', *Journal of Law and Economics*, 1, 1958. A similar situation occurs when traders attempt to corner a market. The Bunker-Hunt's attempt to corner the silver market in the early 1980s ran into the same problem. They thought that all they needed to do was count up all the silver reserves and attempt to buy the existing stock. What they found out was that, as the price rose, the stock of available silver rose! The fallacy is a simple one. Those attempting to corner a market are betting on the fact that the law of demand tells them that, by restricting the supply, the price will rise. What they seem to forget is that the law of supply

says that, the higher the price, the greater the supply that will find its way to the market.

15 K. Harrigan, ‘A framework for looking at vertical integration’, *Journal of Business Strategy*, 3, Winter 1983, 30–7.

16 The best study of the drivers of franchise arrangements is S. Norton, ‘An empirical look at franchising as an organizational form’, *Journal of Business*, 61, May 1988, 197–218. Norton was able to show that two factors appear to distinguish franchise organisations from similar non-franchise organisations, principle-agent incentives and information incentives. He notes that these problems lead to a sharing of risk and return as a way of controlling the inability of the franchisor to monitor the franchisee and the inability of the franchisee to keep from being expropriated by the franchisor; for example, by demanding higher royalties once the franchisee has made its fixed investment.

17 ‘Zeos hikes vertical integration, widens notebook, desk lines’, *Electronic News*, 30 March 1992, 14.

18 D. Kirkpatrick, ‘Breaking up IBM’, *Fortune*, 27 July 1992, 44–58.

Chapter 9 The strategic gains from horizontal integration and diversification

1 This is Jensen’s free cash flow argument. See M. Jensen, ‘The eclipse of the public corporation’, *Harvard Business Review*, 67, September/October 1989, 61–74.

2 Although recent numbers aren’t public for RJR Nabisco, Philip Morris currently earns an ROA of 28 per cent on its cigarette operations and only 9.5 per cent on its food operations.

3 What is most illustrative about this point is that Ross Johnson, RJR Nabisco’s chairman in the 1980s, proposed breaking the company up into separate food and tobacco operations as a basis of his management buyout of the company.

4 R. Comment and G. Jarrell, *Corporate Focus and Stock Returns*, Rochester NY: Bradley Policy Research Center Working Paper, University of Rochester (unpublished), 1993.

5 L. Lang and R. Stulz, *Tobin’s q, Corporate Diversification, and Firm Performance*, Cambridge MA: National Bureau of Economics Working Paper, 1994.

6 The ratio market value:book value is an approximation of what is known as Tobin’s q. Tobin’s q is technically the ratio of replacement value to purchase value of assets for which market value to book value is a good proxy. Tobin’s q is a much better measure of accumulated value than accounting based measures such as ROA and ROE.

7 Standard industrial classification (SIC) codes define industries based on hierarchical 4-digit codes. For example, 28-- is chemical and related processes

while 2834 is pharmaceuticals and 29-- is petroleum and 2911 is petroleum refining. See chapter 10 for a discussion of industry definition.

8 V. Mahajan and Y. Wind, 'Business synergy does not always pay off', *Long Range Planning*, 21, February 1988, 59–65.

9 R. Norman and R. Ramirez, 'From value chain to value constellation: designing interactive strategy', *Harvard Business Review*, 71, July/August, 1993, 65–77.

10 A linear system is one where activities follow in a line. In all fairness to Porter, we should note that he does talk about more complex configurations of value chains. However, the logic of Norman and Ramirez is different in both substance and style from more traditional value chains as described in the literature.

11 This example is highly stylised to make a complex argument simpler. Banks do considerably more than outlined here and the arguments herein are not meant to be a perfect reflection of true bank operations.

12 T. Devinney and W. Hightower, *European Markets After 1992*, Lexington MA: Lexington Books, 1991.

13 Pacific Dunlop, *1992 Annual Report*, 1.

14 Advance Bank, *1994 Annual Report*, 2–3.

15 Australia, unlike the United States, permits banks to hold equity positions in corporations. This creates a curious difference between the incentives facing directors of American versus directors of Australian companies. Banks, unlike ordinary shareholders, hold both debt and equity positions in companies. This leads to a demand on the part of the banks for more stable cash flow patterns which the banks can enforce because of their shareholding position. In the United States, banks also want stable cash flows but have no voting rights. Equity holders do not care about stability of cash flows as long as the price reflects risk. The end result is that countries permitting banks to hold equity will find their corporations putting more emphasis on cash flow stability rather than equity return generation. See T. Devinney and H. Milde, 'Managerial contracting and bank lending with private information', in W.-R. Heilmann (ed.), *Geld, Banken und Versicherungen*, Karlsruhe Germany: VVW, 1992.

16 C. Simon and M. Sullivan, 'The measurements and determinants of brand equity: a financial approach', *Marketing Science*, 12, Winter 1993, 28–52.

17 A. Hax and N. Majluf, 'The use of the growth-share matrix in strategic planning', *Interfaces*, 13, 1, 1983, 46–60; A. Hax and N. Majluf, 'The use of the industry attractiveness-business strength matrix in strategic planning', *Interfaces*, 13, 2, 1983, 54–71.

18 See T. Devinney and D. Stewart, 'Rethinking the product portfolio: a generalized investment model', *Management Science*, 34, September 1988, 1080–95.

19 See T. Nguyen, A. Séror and T. Devinney, 'Diversification strategy and

performance in Canadian manufacturing firms', *Strategic Management Journal*, 11, September 1990, 411–18.

20 See T. Devinney, 'New products and financial risk changes', *Journal of Product Innovation Management*, 9, September 1992, 222–31.

21 A. Campbell, M. Goold, and M. Alexander, 'Corporate strategy: the quest for parenting advantage', *Harvard Business Review*, 95, March/April 1995, 120–32.

22 This example is developed from G. Owen and T. Harrison, 'Why ICI chose to demerge', *Harvard Business Review*, 95, March/April 1995, 132–42.

Chapter 10 Strategic rivalry

1 It is interesting to note the asymmetry in this case. It is very unlikely that snack food companies could move into beverage operations since the skills necessary to be a successful brewer are quite unique. However, the production of simple snacks, such as pretzels and crisps, is relatively uncomplicated, the major key success factors being promotion and distribution.

2 In a very detailed statistical analysis, Clarke found that SIC delineation of industry boundaries was quite imperfect. His results show that simple industry breakdowns based on two-digit SIC codes is good for crude industry analyses. However, large errors can be made by attempting to cluster companies based on their three- and four-digit SIC industry specifications. See, R. Clarke, 'SICs as delineators of economic markets, *Journal of Business*, 62, January 1989, 17–31.

3 Do not assume that $\varepsilon_{\mathrm{Performance}_i,\mathrm{Actions}_j} = \varepsilon_{\mathrm{Performance}_j,\mathrm{Actions}_i}$. For example, if company i is a large company with high market share, its actions will have more impact on the performance of its smaller competitors than would be the reverse.

4 There are many different ways of measuring similarity, each with its benefit (normally accuracy) and cost (normally computational difficulty). However, the basic idea is one of similarity as measured by spatial distance. The weights used in these measures are determined by statistical analysis that accounts for the correlation between different attributes.

5 K. Cool and I. Dierickx, 'Rivalry, strategic groups and firm profitability', *Strategic Management Journal*, 14, 1993, 47–59.

6 B. Henderson, 'The origin of strategy', *Harvard Business Review*, 67, November/December, 1989, 139–43.

7 See R. Caves, 'Economic analysis and the quest for competitive advantage', *American Economic Review*, 74, 127–32, 1984, and R. Cave and M. Porter, 'From entry barriers to mobility barriers: conjectural decisions and deterrence to new competition', *Quarterly Journal of Economics*, 91, May 1977, 241–61.

8 M. Peteraf, 'Intra-industry structure and the response to rivals', *Managerial and Decision Economics*, 14, 1993, 519–28.

9 J. McGee and T. Howard provide a summary of many of the measures used to date; 'Strategic groups: theory research and taxonomy', *Strategic Management Journal*, 10, 1986, 101–07.

10 Examining the payoffs we see why this is the case. The advertising firm gains 50 in period 1 but loses 30 in each of the subsequent periods. The other firm loses 50 in period 1 but reduces this to 30 by responding with advertising. It will, therefore, respond by advertising.

11 A. Dixit and B. Nalebuf, *Thinking Strategically*, New York: W. W. Norton, 1991.

12 July 25, 1961. Sourced from F. Ilke, *How Nations Negotiate*, New York: Harper and Row, 1964, 67.

13 This is a classic example of a situation where knowledge is not power. The knowledgeable rival is driven to act as if it was unknowledgeable. One solution is for the knowledgeable player to reveal its knowledge for free since it would be better off playing against an informed opponent. This is what is known as *cheap talk*. For cheap talk to work it must be credible. In other words, the unknowledgeable opponent must recognise that by acting on the information it would not be making itself worse off and its rival better off.

14 This practice was declared illegal in the United States in a multi-million dollar suit brought against the major airlines. Although the American carriers signed a consent decree agreeing to cease the practice, it is still commonly used by non-American carriers outside the United States.

15 R. Axelrod, *The Evolution of Co-operation*, New York: Basic Books, 1984.

16 O. Heil and T. Robertson, 'Toward a theory of competitive market signaling: a research agenda', *Strategic Management Journal*, 12, September 1991, 403–18.

17 Some strong reasons exist that lend credence to the belief that Murdoch's actions were ill conceived. There appeared to be two rationales behind his move. The first was the belief that a newspaper needed a minimum circulation level to be profitable. This is both a scale of production argument and an advertising circulation-based argument and appears to be reasonable. The second rationale was based on a test market that *The Sun* conducted in Kent. It was found that a 33 per cent decrease in price led to a 15 per cent increase in circulation. This is where the mistake appears to have been made. Firstly, there was no attempt to adjust the 15 per cent increase for long-run competitive reaction. Secondly, the figures indicate that the price elasticity is –0.45. In other words, newspaper demand is not price elastic but price inelastic implying that a price reduction would lead to lower, not higher, revenue!

18 The classic example of this is the preannouncement of new products, that is, the announcement of a new or updated product long before its availability. Chaney

and Devinney (*New Product Preannouncements*, unpublished manuscript, Australian Graduate School of Management, University of New South Wales, 1997) have shown that preannouncers are generally the dominant companies in less competitive industries. This logically follows since the preannouncements generally lock customers into waiting until their preferred provider has the new product. IBM was a classic preannouncer in its heyday of the mid-1980s. Today, Microsoft would be a classic preannouncer using its lock on PC operating systems.

19 J. Eliashberg, T. Robertson and T. Rymon, *Market Signalling and Competitive Bluffing: An Empirical Study*, Cambridge MA: Marketing Science Institute, 1996.

20 H. Gatignon, E. Anderson, and K. Helsen, 'Competitive reaction to market entry: explaining interfirm differences', *Journal of Marketing Research*, 26, February 1989, 44–55.

21 A. Dixit and B. Nalebuff, *Thinking Strategically*, New York: W. W. Norton, 1991.

Chapter 11 The totality of corporate strategy

1 Niccolò Machiavelli, *The Art of War*, translated by Ellis Farneworth, New York: Da Capo Press, 1965, 122.

2 von Clausewitz, *On War*, translated by J. J. Graham, London: Penguin Books, 1982; I.2.

3 A more detailed discussion of strategic planning is given in H. Mintzberg, *The Rise and Fall of Strategic Planning*, New York: Prentice-Hall, 1994.

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